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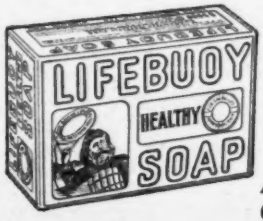

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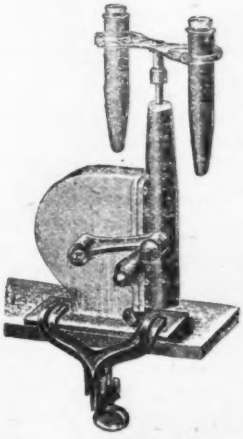

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The answer soft that turneth wrath away;
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I want to do all that the Master saith;
I want to live aright from day to day;
I'm sure I shall not pass again this way.

ANNUAL MEETING—MEDICAL OFFICERS OF HEALTH OF ONTARIO, MAY, 1914

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THE TRANSMISSION OF TYPHOID

By H. W. HILL, M.B., M.D., D.P.H.

Director, Institute of Public Health, London, Ontario

Presented at the Convention of the Ontario Medical Officers of Health, May 7-8, 1914.

TYPHOID fever is of peculiar interest in epidemiology because, unlike any other disease of this part of the world except dysentery, it is transmitted by all the five great routes of infection; most of the other diseases being transmitted only by one, two or three. It has proved to be the simplest of all diseases to trace to its source in epidemics, probably on account of its long incubation. Epidemiology as applied to infectious diseases in general owes a great deal to the particular epidemiology of typhoid fever, because the investigative methods worked out for typhoid led the way to the finding of the simple direct applicability, *mutatis mutandis,* of similar methods to other diseases.

It is interesting to recall that typhoid fever has only been recognized definitely for about one hundred years. There is no question that it had existed for ages before that, but had been confused with typhus fever; even to-day remnants of this mistake are preserved in the form of the Latin name of the disease, *typhus abdominalis,* and in a clinical procedure which every student is taught, the testing of the rose spot with the finger to see whether or not it will disappear on pressure. This test originated when it was first attempted to distinguish typhoid from typhus, and we continue it now although the necessity for it has disappeared largely.

Typhus and typhoid were considered filth diseases originally, and were associated in the public and in the professional mind with dirt, poverty and ignorance, a run down system, general decrepitude.

It is interesting that both of these diseases, supposed to be typical filth diseases, have been shown not in any way connected with or dependent upon filth; typhus being purely and simply the result of the bite of an infected body louse (or head louse); while typhoid is simply and solely the result of putting into the mouth the discharges of a typhoid-infected person. No amount of filth can in any possible way generate either disease in the absence of the specific cause; no amount of cleanliness can prevent either one, provided that the specific modes of infection are given opportunity to act.

It may be well to review briefly and at the same moment cast aside, the alleged modes of transmission of typhoid in which our forefathers believed. Sewer gas; swamp air; organic matter in water, whether of animal or vegetable origin; evolution, from the ordinary intestinal bacteria, of the typhoid bacillus; a gradual "running down of the system;" stress, strain and "general unsanitary conditions;" these we know now definitely have

no part in its causation, and it is difficult for us to conceive how our forefathers received the impression that scrubbing floors or cleaning up backyards could interfere with a water-borne outbreak. Two more fallacies are still heard repeated; one, the fear of typhoid from cows sick with typhoid. It will be remembered that Stokes of Baltimore fed typhoid cultures to a cow and a calf every day for a month and failed, not only to make them sick, but even to find the germs of typhoid in any of their discharges. The second is that typhoid is carried by flies in well-sewered cities. Of course we may admit an occasional case or two carried by flies from an exposed bedpan or similarly infected utensils or laundry, but practically speaking, typhoid fever is carried only where non-fly-proof, outdoor toilets exist; and this means principally in the rural districts or in parts of the cities where sewers have not yet been installed.

Cause and Source.

The real cause of typhoid fever, as we know now, is simply the typhoid bacillus. Its real source is the living, human body infected with that germ. From the body, it is thrown out in the discharges of the bladder and bowel. In this it parallels cholera, but it differs from cholera in the fact that the causal bacilli are rarely found in the mouth. Hence typhoid is rarely, if ever, distributed by mouth discharges. Cholera, on account of the terrible vomiting, often stercoraceous, distributes itself by mouth-spray and vomit-spray, by sputum, and by the vomit itself in a mass. Doubtless this difference explains, at least in part, the terrible infectiveness of cholera cases as distinguished from the comparative innocence of typhoid; an innocence comparative only.

Note that the chief source of typhoid is the *living*, human body. Dead bodies distribute the disease but little because dead bodies have no discharges if reasonably cared for. The old idea that typhoid might come from cemeteries has never been confirmed in my experience; indeed, I have never known cemeteries to act as sources of any disease. It is theoretically possible in limestone districts but highly improbable even there. Old wells standing unused for years have often been held to breed typhoid, while the fact is that he typhoid germ will seldom live longer than two weeks; and the best way we know of purifying water is merely to store it for a month. Old houses having sheltered typhoid away back in their history have sometimes been held responsible for cases developing amongst new occupants; but the typhoid germ has no spores, and the old fears of prolonged infection in dust from typhoid are quite as unfounded as similar fears concerning scarlet fever, diptheria or tuberculosis.

For similar reasons old cesspools are equally innocent. In fact, typhoid germs, like most other pathogens, must be transmitted while still fresh from their sources if they are to be transmitted successfully, for they rapidly die out under almost every condition apart from the living human body.

The cause of the disease being typhoid bacilli, and the vehicles in which these are carried being the bladder and bowel discharges of infected persons, the routes of transmission are naturally those routes by which such discharges may travel. Although one can imagine many possible routes, some very intricate, even bizarre, yet probably the main everyday routes for 999 cases out of each thousand are water, food, flies, milk and contact.

Water.

Although water receives so much attention, it is not so great a factor as common belief would suggest. Our studies in the State of Minnesota, where we had about ten thousand cases a year, made us believe that water-borne typhoid constituted only about one-third of the total. I think that the reason why water-borne typhoid has absorbed the bulk of attention paid to the routes of typhoid infection is this; water-borne typhoid is seen chiefly in great crushing outbreaks, which make a great impression, are remembered long; while the less spectacular outbreaks, less concentrated and more spun out, due to the other routes, are not so well understood or remembered, although they may actually total a greater number of cases.

Water-borne typhoid is but seldom traced to a well; yet most physicians on

seeing typhoid will rush out at once to the pump, fill any old bottle with water and send it away to be analysed. I need not go into the folly of such a procedure further than to state that in my own personal experience covering over seventy personally investigated outbreaks of typhoid, and involving intimate knowledge and control of a good many more, I have yet to encounter a single case traceable to a private well. That such may occur where the well is sunk in limestone or creviced rock, I can quite believe; indeed I know they are on record; but in soils of sand, clay or gravel, or composed of other good filtering material, infection of wells through the soil is practically out of the question, and such wells must receive their infection if they receive any, through the mouth of the well, perhaps from an open curb allowing a back drip, which carries in with it infecting material dropped on the curb from bedpans: or from the feet of humans or animals crossing the curb. Theoretically possible though this be, I think that universal experience shows such methods seldom work in practice. In the few public wells I have known to give rise to typhoid, the infection occurred by direct entry of sewage into the well; in one case by the backing up of a sewer directly into the well; in another by percolation through creviced rock. The great mass of water-borne typhoid comes from open surface waters, rivers, lakes or ponds, and such waters. Outbreaks occur chiefly in winter for in summer the sunlight interferes with the germs.

Two important points should be noted; first, that communities should not be trusted with double water supplies, of which one is open to infection. This is sometimes done where the good drinking water supply is small, and the second polluted supply is carried in for fire protection. In such cases, the public will drink from the polluted water despite all warnings. The other point is somewhat like it; that the frequent practice of connecting a good water supply with polluted water by auxiliary pipes to provide for fire emergencies should never be allowed. Many and many an outbreak has developed under such circumstances, following a fire in which the fire chief thought he needed the extra polluted water to keep up his pressure.

The characteristics of a water outbreak are suddenness; the extensive development of many cases; and a distribution corresponding with the distribution of the water supply. When due to gross contamination of water with sewage, such outbreaks of typhoid fever are often preceded by very sharp outbreaks of diarrhoea. These diarrhoea outbreaks occur on the day, or the day or two after, the admission of the sewage to the supply. The typhoid outbreak comes on later; the first cases usually not diagnosed for three weeks or a month. In the interval the diarrhoea cases have all recovered; and the outbreak of diarrhoea is likely to be forgotten before the typhoid outbreak appears.

Food.

Food in the family circle receives the family discharges and thus often aids the transmission of typhoid from person to person in the household if one case is present; but food as it is distributed from supply centres to families rarely conveys infection to them from outside because after it is received into the family it usually is cooked. Practically, food outbreaks of typhoid from sources outside the household are rare, and when they occur are usually due to oysters eaten raw, raw vegetables or such similar matters. (Milk and milk products form such an important route of typhoid that it is well to consider them separately).

Flies.

Flies carry typhoid without question when typhoid discharges are open to them. They carry the material on their feet and deposit it upon food as a rule, although it is possible that a fly might, as sometimes happens, blow or fly directly into an open mouth.

Fly typhoid is well-known in Insane Asylums for the reason that typhoid-infected persons, recognized or unrecognized, are often admitted; and since, on account of their physical condition if sick, or their mental condition if well, such persons are apt to distribute their discharges quite loosely, flies can get at them readily if there are flies about. In camps with

exposed discharges and in that one-half our population which lives in the country districts with crude toilet facilities, paralleling camps in this regard, fly typhoid is prevalent. In well-sewered cities, however, fly typhoid can hardly exist because the discharges which flies might carry if they were deposited outside, are swept away by the sewers. It is true that in some cities whole districts may not be connected with sewers and in such, fly typhoid may exist. It must not be forgotten that a great deal of summer diarrhoea and dysentery is carried by flies.

Milk and Milk Products.

Milk to quite an extent, butter sometimes and possibly cheese may carry the typhoid bacillus. It is usually only in fresh milk that the typhoid germs will live long enough to make a successful entry to human bodies. Undoubtedly it is for this reason that milk-carried typhoid is not common in big cities. The great disadvantage which big cities suffer in using comparatively old milk gives them this one advantage; infection with pathogens tends to die out because of that very disadvantage, the age of the milk.

Typhoid infection of milk usually occurs by the placing of human discharges in the milk at some stage at which it is handled by humans, as for instance, a walking case or carrier or attendant on a case of typhoid fever who milks the cow, washes the cans, caps the bottles, or in some way gets fingers into the milk.

It is possible that adulteration of milk with typhoid infected water might give rise to an outbreak, and it has been suggested that cows standing in typhoid-infected rivers or ponds might, when being milked, shed typhoid bacilli picked up from the water by their skins or their hair. Practically speaking, however, the great method of milk infection is by hands. Milk typhoid outbreaks are usually sudden but scattered and in close correspondence with the consumers of some one given milk supply. It is usual to find that the milk is infected only on one single date; but if a walking case should continue to handle the milk for some length of time, the milk might for that period be continually dangerous. In one instance which I worked out for myself, I found that milk had been responsible for all the typhoid of a certain small community during a period of about five years. Previous to this period, native typhoid had been unknown there. At the beginning of the period, a new family had come to town and opened a milk route. Every case which occurred during the five years was on the milk route of this family or at least had access to that milk. At the time I investigated, I found that the only suspicious person was the old mother who washed out the milked cans. She had had typhoid twenty-two years before. The family left the town then and in the five years that have elapsed since, no native typhoid has occurred there at all. It is, however, rather unusual to find a typhoid outbreak from one such source continuing so long.

I have seen but one butter outbreak of typhoid. The ordinary routes were eliminated, although with some difficulty, and a certain grocery store was shown to be the centre of radiation of cases; but no source of infection could be discovered there.

The one material used in common, however, by all the cases, was found to be a certain day's sale of butter; and by persistent visiting of dairies all around the neighborhood, a part of the butter contributing to this day's sales was traced to a family where a walking case, a girl, had helped to make this particular butter while her mistress who usually made the butter was sick.

Contact.

Contact is a very common method of typhoid transmission. Never mind what the original route may be, water, food, flies or milk, the cases arising from that route often may give rise to others by direct contact. This means that the nurse or attendant takes the discharges on her fingers and puts them into her mouth or into the food of the others. The contact may be more or less round about, but in the great mass of cases, hands are the principal factor. In handling all typhoid outbreaks, the first thing to do, it is true, is to find such a general source as water, milk, etc., if such is responsible for the main outbreak; but it is equally essential to carry out the strictest supervision to

prevent the continuation by contact of the original outbreak.

Mixed Routes.

Outbreaks sometimes may occur from two or more independent sources happening to operate together. Thus I have seen an outbreak of typhoid and dysentery in one community due to flies; and in a hotel in that community another outbreak of typhoid carried by the hotel well into which sewage had backed. In investigating this place more or less confusion might readily arise if one did not take into account the chance of two separate outbreaks existing at once.

Method of Epidemics—Water.

Water outbreaks are most readily ended, so far as the water is concerned, by installing hypochlorite treatment. In Minnesota we kept ready for shipment the necessary plant for treating a million gallons a day. The whole thing cost less than fifty dollars. When packed, we could ship this plant in a very short time with instructions how to install it, thus purifying the water long before notice to boil the water could be propagated through the community so as to really reach the inhabitants. If immediate chlorination is impossible, instructions to boil the water printed on placards and publicly posted up on at least three points on each side of every block in the community, is the shortest way to notify the people. This notice should be a very condensed one in very large type, such as, TYPHOID—BOIL THE WATER, and signed by the Board of Health. Newspaper notices are usually far too slow in reaching the public effectively. Permanent reformation of the water supply should then follow of course.

Food.

In food outbreaks the infection of the food which is responsible has usually ceased before the typhoid develops; if not, however, the indications are to see that the guilty food is cooked or eliminated from the diet, and to search for and stop its contamination if possible. (See Milk).

Flies.

Fly outbreaks can almost invariably be stopped instantaneously by merely fly-proofing the outdoor toilets except in those rare cases where deposits of human discharges in the open may be responsible. Such fly-proofing means only stopping all holes in the walls or ceiling and placing a weight or a spring on the door. It does not mean necessarily any elaborate structure of fly screens, etc. Limeing of closets is often recommended but is almost invariably a fallacy since it is a process that must be continued day after day for efficiency and usually will not be so continued in any large percentage of cases.

Milk.

In milk outbreaks the search for the person infecting the milk should be tried at once and if successful within a few hours, the elimination of that person stops the outbreak. Should there be difficulty in finding the infecting person, however, the milk supply must at once be stopped or pasteurized and this status should be continued until the infecting person is found and eliminated. Occasionally neither stopping the supply nor pasteurizing the milk is practicable. In such a case the safest way, if the infector cannot be found, is to transfer the handling of the milk to a totally new set of persons. Of course, in the rare cases where the addition of infected water to the milk is the source of the trouble, the elimination of such addition would be sufficient. It is a wise precaution in all cases to have a thorough disinfection of all utensils.

(Note—Infection of milk with typhoid is comparatively rare; with bovine tuberculosis, almost continuous. Milk should be pasteurized always for the sake of the latter, even if typhoid were unknown.)

Contact.

Contact outbreaks can only be stopped by the most rigid and consecutive attention to the washing of hands after each contact with the patient or the patient's discharges, or by the immunization of those who are in attendance on the sick. The precautions regarding hands must be insisted on even after immunization, for the sake of the unimmunized to whom the immunized may carry infection in contact. Hence proper precautions about hands

are really more inclusive than immunization.

Summary.

To sum up: Handling of typhoid from the standpoint of prevention involves, first, the purification of any infected route which may exist, by the various methods already outlined. Second, the immunization of those exposed to infection; this sounds hopeful and when it can be enforced as in armies has proved very useful. I do not expect it to be a great factor in civil life, however, for we have had one hundred years of vaccination against smallpox and still have a large percentage unimmunized against that disease. It does not seem likely that vaccination against typhoid will become any more popular. Third and to my mind the greatest method of all, is the prevention of infection of the various routes through supervision of the sources of infection, that is, the infected persons themselves. Once typhoid discharges are eliminated from water supplies even water purification would become unnecessary. Once human infected discharges are excluded from outdoor toilets, even the fly-proofing of the toilets, would become unnecessary to eliminate typhoid, although still vital for other reasons. In brief, if we had no typhoid bacilli there could be no typhoid, and there can be no question that by supervising these sources of infection, the elimination of typhoid is best secured. Supervision of sources is much cheaper as well as much more efficient than the purification of routes. The expenditures necessary to purify properly sewage, water supplies, food, milk, etc., are enormous. Supervision to eliminate need of such protection would not cost a tithe as much and would abolish disease, not merely affect a small part of it. Were typhoid all purely water-borne, enormous expense to secure purification of water would still be less advisable than the supervision of typhoid infected persons, to prevent them from infecting water. But since no amount of purification of water will eliminate more than a fraction of the typhoid, and will leave fly, food, contact and milk typhoid still untouched directly, supervision which will go to the heart of every source and each route is evidently far more needed, far more efficient, less costly. Finally, a mechanism for supervision of typhoid would be applicable to the supervision of all other infectious diseases as well as typhoid.

EGO-MANIA.

Conceit.

Diagnosis—

Every man has just as much conceit as he lacks understanding. —Pope.

Remedy—

Mental education has for its first and last step humility. But the humility will not be founded on comparison of ourselves with the imperfect standards around us, but on the increase of that internal knowledge which alone can make us aware of our internal wants.—Faraday.

SUNLIGHT IN CITIES

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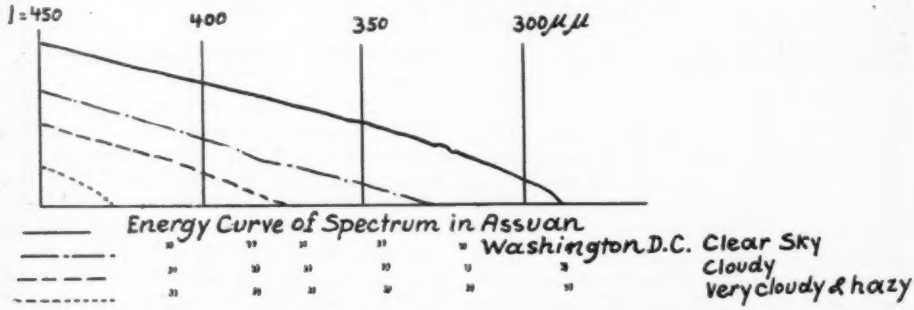
THE deterioration of the air due to the congested living conditions in the larger cities, the action of smoke and dust and the haze more or less frequently called forth by them has many times been animatedly discussed and the air of great cities in distinction to the open air of rural districts or even near the sea soast and in mountainous regions of high altitude is considered one of those factors which from a hygienic standpoint affect most unfavorably the living in great cities. Innumerable efforts have during the development of great cities in the last fifty years made their influence felt in the direction of ameliorating the air by more or less fortunate operations. Much less interest, however, has been extended to a question that although perhaps not of the same significance as the air question of great cities yet deserves also great interest, that is the matter of sunlight in cities.

Bacteriology has long since shown how great an influence is exercised by the sunlight on the microbes particularly on those of the pathogenic class. We know that the vitality of these germs is in the main affected by light more than by any other natural agent and that the rapid increase of the same where nutritious matter accumulates can by no measure be as vigorously combated as by a sufficient provision of light and radiation of the sun. The germ killing effect of light, it is true, belongs indirectly to all of the several kinds of light inasmuch as the transformation of the sunrays into heat favors the drying of the surface strata of the soil in cities, especially of the wearing surface of streets. Besides this undoubtedly very effective indirect influence exercised by the solar radiation there is a specific sterilization property of the light itself the efficacy of which is quite generally appreciated. This sterilizing power of light, as by numerous experiments has been again and again demonstrated, is primarily due to the rays of light with a high period, that is to the blue, violet and ultra violet ones and thus the germ killing effect of a certain amount of mixed light will have to be taken as primarily dependent on the amount of short-waved rays. Following this line of reasoning one can realize that the amount of light and especially the amount of short-waved light radiated is of a great hygienic significance. The mass of light falling in the course of a year upon the unit area of the earth depends on the geographical position of the place; it attains its maximum of course in the tropics and the annual quantum of light radiated decreases as the latitude increases. The smaller the angle of incidence of sun-rays the less the quantity of light per unit area. Hence in winters at medium latitude the light is inferior to that of summers. But apart from these variations in the quantity of light radiated, arising from variable angles of incidence, the amount of light falling upon the earth is governed by the meteorological circumstances. If the sun of the direct light and that reflected by the shining firmament is determined for the individual days of a year from merely astronomical considerations a regular annual period of daily solar radiation will of course be obtained, the contrast between the different seasons becoming the more pronounced the higher the latitude of the place runs. Such a diagram of light distribution, however, represents only one factor for the quantity of light actually radiated as this depends also, even in a still higher degree, on the climatological and meteorological conditions. The average clouding of a place, its mean density, abnormal clouding conditions that vary from day to day involve much greater differences in the amount of light than do the purely astronomic relations.

If this is true for the open country it is in a much higher degree also true for cities and especially for great cities. While the clouding creates also in the country many changes in the light conditions on the surface of the earth, so much so that for instance, during a thunder storm in summer, when the sky is heavily clouded, the actual amount of light can be reduced to a small percentage of that one supplied to a place when the sky is clear, these circumstances get much more unfavorable in great cities where besides the normal clouding with all its contingencies, another factor is light absorbent namely smoke and dust. The creation of this smoke and dust, however, deserves our special attention with regard not only to the quantity but also to their quality. The investigation indicates that especially smoke even in relatively thin layers effects a selective absorption in such a way as to impoverish the light passing through the medium particularly in ultra violet and violet rays. The yellow coloring of sunlight observed in the alleys of great cities underneath their perpetual smoke veil alone is a plain expression of this fact, but it can much more apparently be shown by a spectroscope.

Under the most favorable circumstances the most refrangible rays reaching the surface of the earth are those of 290MM. These exceedingly short-waved rays are sometimes at long distances of a great city, even under the perpetually clear sky of the desert, subjected to continuous fluctuations in their quantity the essence of which being as yet entirely unknown and on single days the quantity of ultra violet light is notably large. In the hazy atmosphere of great cities, however, not only the sun spectrum terminates with much greater wave lengths, on an average of about 305 MM, but also the radiation from about 400MM downwards is considerably impaired, in most cases well nigh extinguished.

See diagram!



True, also in the centre of great cities, there are days, especially those with strong air currents extending to considerable heights on which hardly any appreciable light absorption of practical significance occurs owing to the clearness of the sky and the fairly complete removal of smoke and dust by strong winds. But these days are rare as compared to the great number of those on which the contrary takes place. Especially on quiet days and on days when layers of temperature inversion close to the ground are formed, as it frequently happens in the winter, the smoke above great cities gathers in thick layers, impervious to short-waved light, allowing only a subdued glaucous light to reach the ground. Should the formation of fog supervene, owing to favorable meteorological conditions, the generally weakening of light can become appallingly increased not only say in London which was noted for its fogs, but also in great cities of this country. The maximum of such dimness, as experience indicates, always takes place when smoke and haze volumes gathered by light winds over a section of a great city begin to be slowly carried off by stronger winds.

It is to be regretted that direct measurements concerning the loss of light and its qualitative variation on a spectrum are not yet available in continuous series of observations. It would be most desirable to study these questions during a sufficiently long period at stations distributed symmetrically around a great city. *From single*

observations it has been found that the total intensity of light under above circumstances is liable to decrease to 0.1-0.3% *of the light radiated.*

That these months of minimum quantity of light offer a particularly favorable prognosis with regard to spread of epidemics such as influenza, diptheria, measles and scarlet fever, can from what has already been stated be easily understood and is in an alarming manner corroborated by experience. Especially influenza contagion, apart from single exceptionally grave epidemics, is in the main confined to great cities and more frequent in the winter months, and we might not go far wrong if we associate this dangerous appearance to the lack of light and particularly to the impoverishment of light in short-waved rays. Surely experience indicates inter alia that sunny days tend to restrain an epidemic and that even in otherwise unfavorable meteorological circumstances the number of the grave cases of illness drops when the sky clears. Nay, one might feel tempted to say that that psychic depression visiting many people in prolonged periods of darkness has some relation to these occurrences and that the invasion of our bodies by infectious germs and the persistent struggles to resist them involve great loss of energy resulting in impairing our mental welfare.

After thus observing the reasons for cities being in want of light from one point of view and although knowing that their actual effect on public health can at present be only divined in its roughest outlines we must not forget that a great number of additional circumstances in a great city act in the same way. The quantity of light falling upon the surface of the earth is within the precincts of a great city, distributed and distracted over a much greater area; for in courtyards, narrow streets, and particularly in dim habitations, the want of light is, of course, much greater than in the open country even if the physical conditions are alike. *From this viewpoint all arrangements increasing the quantity of light per unit area in a great city are of greatest hygienic significance. Wide places, broad streets, houses having fewer stories and wide court yards, will as to their hygienic effect have to be appreciated from the standpoint of light economy as well as from that of air economy.*

Consequently one should take an interest in those cultures which for other considerations are favored and propagated but are apt to lessen the quantity of light in great cities, namely, the planting of trees. The question arises whether rows of trees in streets apart from asthetic reasons are desirable from a hygienic point of view. That they actually bring about a marked melioration of the air, which alone would justify planting them, has never been proved. At any rate, the effect of vegetation as an agent for absorbing carbon dioxide and producing oxygen can hardly be demonstrated by chemical analyses of the air. On the other hand, however, the planting of trees is capable of lessening the available quantity of light. Rows of trees in streets and not in parks are objectionable from this point of view. Trees planted close together shade the ground and even during the leafless period they minimize the quantity of light falling upon it. Thus they help to retain the moisture of the soil, keep it permanently damp and are, together with the loss of light caused by them, therefore, to be considered direct promoters of the vitality of pathogenic germs. The author is aware of a city in one street of which the dense and increasingly dense growth of trees darkened entirely the lower stories of the house and finally had to be removed. In the superior residential districts of great cities occur chiefly the streets in which the trees are planted so densely or so near the house that the lower floors are supplied perhaps with less light than the back premises of the industrial quarters.

Another effect of the rows of trees in streets being unfavorable from a hygienic standpoint which might, incidentally, be referred to here, is not less significant, and implied by the generation of dust. While on quiet days the dust collects immediately on the ground and when the streets are cleaned is removed more or less perfectly from the paved area, an immense quantity of dust settles on the leaves covering with increasing density their surface causing the trees themselves to sicken and making them shed their leaves early. On the other hand, the dust is raised up again by every breeze and together with the germ contained in it is carried into the human habitations.

The dust plague is in this manner, no doubt, intensified. This fact, in connection with the circumstances stated above, does certainly not tell in favor of trees in the streets of cities from a hygienic standpoint. This is all the more true as the leaves can be considered not only purely absorbing and thus mechanically weakening the light, but particularly because the leaves influence the light selectively and a plant, as everybody knows builds up its body of inorganic substances, exploiting the chemical energy of the light for this process.

These statements are of course not intended to argue in general against the planting of trees which, especially in the Canadian prairie provinces, are urgently needed, but to point out some sanitary drawbacks owing to the impairing of light by the trees planted in streets which have sometimes become manifest and ought to be borne in mind. *Much more favorable in this respect and growing more and more popular is the method of using lawn strips and flower beds instead of rows of trees so as to make the dim spots especially of the superior residential districts lighter and fresher.* As a means of compensating for the varied losses of light in cities the communities could provide sunbaths for the public where the beneficient action of the sunlight upon our bodies can be fully enjoyed. Such baths have in the last ten years been introduced in most of German cities. In the city of Magdelburg having 280,000 inhabitants, for instance, there are six of them and they are becoming more and more appreciated, much for the good of the public health.

MENTAL BLIGHT.

Idleness.

Diagnosis—

Of an idle unrevolving man the kindest destiny, like the most assiduous potter without wheel, can bake and knead nothing other than a botch, let her spend on him what expensive coloring, what gilding and enamelling she will, he is but a botch, a mere enamelled vessel of dishonor.—Carlyle.

Remedy—

Consider how, even in the meanest sorts of labor, the whole soul of a man is composed into a kind of real harmony, the instant he sets himself to work! Doubt, Desire, Sorrow, Remorse, Indignation, Despair itself, all these like helldogs lie beleaguering the soul of the poor day-worker, as of every man, but he bends himself with free valour against his task, and all these are stilled, all these shrink murmuring far off into their caves. THE MAN IS NOW A MAN. —Carlyle.

THE HOUSING PROBLEM

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STATISTICS are available which show beyond a doubt that where the poorest sanitary conditions obtain in dwellings the death rate is the highest, and the difference between the death rates of districts where over-crowding and bad sanitary conditions exist and those of districts with good sanitary conditions is so marked as to be astonishing.

There are, no doubt, other factors leading to these results, as, for instance, the food, clothing, occupation, family history and general habits of the inhabitants of the compared districts, but whatever the causes which brought together the denizens of our slums, one of the principal factors in maintaining the high mortality rates found therein, more especially amongst infants, is the dwelling.

Man is largely a creature of his environment. How can it then be expected that children, born and brought up in districts where one and two roomed dwellings prevail, will compare favorably in physique with those brought up under more favorable sanitary conditions. In such one and two roomed dwellings the very food is bound to become more or less contaminated, and the milk kept there is frequently more of a poison than a food for infants.

The extremely rapid growth of our cities; the continuous influx of foreign-born residents; the steady increase in land values; the increased cost of building construction and the periods of financial stringency have had the inevitable results of insufficient accommodation and over-crowding.

For convenience we will consider some of the leading features of the existing situation under the following headings:—

1. *Faulty Building Construction.* One of the reasons why so many insanitary dwellings are found to-day in our large cities is the absence of adequate building laws and the superficial system of inspection of buildings which obtains. It is only of late years that right city planning and proper regard for sanitary conditions have been given the importance they deserve, and even now many cities are still working under building codes which do not recognize the extreme importance of these things. The extremely rapid growth of our Canadian cities has made it a well nigh impossible task for Building Inspection Departments to provide an efficient inspection system, even in places where the building by-laws are fairly good. The results of this lack of adequate laws and efficient inspection of building construction in the past are well known to Sanitary Inspectors. Take the matter of cellars alone. Thousands of these have been constructed in a flimsy and inadequate manner; porous walls; no weeping drains; no windows; many of them mere dug-outs under the building, frequently under a bed-room; walls and floors constructed of wood, although very often they have no floors at all; either without catch-basins or else these are found to be constructed of wood; sometimes a floor trap only is found, either elevated above the floor and consequently of no use for drainage purposes, or more frequently found buried under the mud of the floor. Such cellars, although not nuisances when first constructed, rapidly become such. The walls cave in, having become soaked and rotten with seepage, or else eaten with dry-rot and covered with fungi. The floors become covered with mud or soaked and polluted with foul sewage due to an overflow through the badly constructed catch-basin. Water closets are often found installed in such foul cellars. Much of the frozen plumbing which

our Canadian Inspectors have to deal with in winter is strictly due to this faulty construction of cellars and basements, and of neglect to protect the space underneath the house from frost in cases where there is no basement, or to instal heating apparatus where a full basement is constructed.

In the City of Winnipeg so much trouble and annoyance was experienced from cellars constructed as described above in the early years of the city that successful efforts were made to have inserted in the Public Health Act of Manitoba clauses requiring that all cellars be properly constructed and as far as possible rendered frost-proof. The walls must be of brick, stone or cement; floors of concrete; adequate weeping drains and catch-basins are required, and windows of an area equal to one-twentieth of the floor space of the cellar. This Act has now been in force over two years, and since then the Health Department has been able for the first time to deal effectively with insanitary cellars.

What has been said of cellars applies to many other sanitary provisions regarding buildings, particularly the lighting, ventilation, over-crowding on space, etc.

Even in cities where fairly good building by-laws are in force, it is extremely difficult to enforce them fully owing to the immense amount of building construction going on, and the relative smallness of the force of Building Inspectors provided. In 1912, for instance, in Winnipeg, over $20,000,000 worth of buildings were erected and yet the staff of Building Inspectors numbered only about twelve. The difficulties of adequate inspection increased owing to the large number of foreign-born builders, who, in some cases, no doubt through ignorance, but in many cases through sheer disregard for the law, endeavor to evade its provisions.

It is a common occurrence for a Sanitary Inspector, shortly before the occupation of a new building, to find that although the building permit distinctly specified a "dwelling house for one family," that the same has been at once converted into a tenement house by allowing two or more families to occupy it, and the Health Department has then to proceed to serve ejectment notices on the owner and occupants. Frequently the builder has by that time sold the house to an innocent purchaser.

It may be fairly stated then that a proper building code and rigid and systematic enforcement of same by an adequate staff of Building Inspectors lies at the root of the whole matter. It would doubtless be of service if a Model Building Code were drawn up, suitable for the whole of Canada, modified to suit certain variations of climate in different parts of the country, and adopted by all towns and cities. This code should include a uniform plumbing and drainage system.

2. *New Buildings.* Tenement houses naturally come to mind when any discussion of the housing problem is attempted.

In this new Western country, at all events, the tenement should not be encouraged. Many cities have found that the housing of large numbers of the population in such buildings is anything but conducive to the best interests of any city from a sanitary point of view.

Tenement legislation in Manitoba dates from 1909. The less that is said about tenements erected there prior to that date the better. It suffices to say that many of these have all the usual faults of tenements erected without proper supervision; narrow courts; dark rooms; non-fire proof construction; dark and damp basement suites (not now occupied for living purposes, however, owing to the efforts of the Health Department).

The New Law apartment houses and tenements are, however, of a much better class, being well built and occupied by a very desirable class of tenants. They are, moreover, mostly isolated and do not form any built-up tenement district, but on the contrary, at the present time the outside rooms of the upper suites at all events get a fair share of sunlight and fresh air. The courts, however, are many of them too narrow and the rooms opening on courts are not desirable for occupation, especially those on the lower floors where direct access of sunlight is in some cases impossible, and in other cases can only occur during very short periods daily. Some of the outer courts, whilst not as yet blockaded, will become so on the erection of similar buildings adjoining. It is not unknown for an owner to roof over the inner parts with glass in winter in order to save the trouble of putting storm sashes on the windows opening to such courts.

When tenement houses become more numerous and extend over whole districts, displacing dwellings and other small buildings, the whole character and sanitary condition of such districts become changed. The well-to-do tenants then depart for the suburbs and a poorer class of tenants succeed them in the rapidly deteriorating buildings. Thus, by easy stages, they become slum property, probably by that time more or less dilapidated, filthy or infected with disease germs.

It may be noted here that frequently the erection of tenements almost destroys the value of dwelling houses when erected immediately adjoining same by shutting off the sunlight. They may also to a large extent spoil the appearance of a neighborhood, so much so, that in some places legislation has already been enacted prohibiting their erection in certain restricted areas in order to protect the rights of owners of dwellings.

Land is still cheap in our Western cities. Probably not much more than half of the available area in most of our towns is built upon. Why then the necessity to house from 20 to 25 families on a small lot? There seems to be no good reason why our citizens should be encouraged to herd themselves together in vast caravanseries instead of living in real homes, open to the sunlight and fresh air. The rents of tenements are not cheaper than those of dwelling houses. Provision for the adequate housing of inhabitants will be made in accordance with the laws of supply and demand. If fewer tenements are erected it follows that the number of dwelling houses will be greater.

A favorite form of dwelling in many cities is the Duplex dwelling, arranged for the use of not more than two separate families, each having separate entrances, separate bathrooms and kitchens. These are generally built to accommodate one family on each floor, and do not exceed two storeys in height. Some by-laws provide that if such buildings are erected on a lot of less frontage than 33 feet, or if erected in groups, they are to be classed as tenements and must comply with all provisions regarding new tenements in respect to height, fire-proofing, distance from lot line (3 feet if of frame construction, brick veneer being also classed as frame).

In a town where houses are in good demand such buildings, if not crowded together, are not objectionable and are a good form of investment for a working man but it sometimes happens that in winter the lower suites of such a house may be vacant, and then, if no heating system for the whole house is provided, the plumbing and water pipes become frozen where they pass through the empty and cold ground floor rooms.

As to dwelling houses erected for occupation by one family only, the by-laws of our Canadian cities should be so drafted as to provide for methods of construction which will, if carried out, ensure that all houses shall be healthy. A new building code was passed this year in Winnipeg, and although it does not contain as many sanitary features as the Health Department could wish, it is a fairly good By-law. It provides for damp-proofing of basements; proper weeping sub-soil drains, properly connected catch-basin; an unoccupied space of lot equal to 20% of area of the lot. Dwellings may not be built fronting on streets or lanes of a less width than thirty feet. The foregoing provisions apply to dwellings, but, of course much more stringent regulations are applied to tenement houses. These may occupy 85% of a corner lot, or 90% if the lot has streets or lanes on three sides, 75% of other lots; if the whole ground floor is occupied for business purposes the tenement may cover the whole area of the lot for the ground floor only, but the upper storeys are to be governed by the above provisions. If built on corner lots and on lots adjoining the whole of the lots on which the building stands are taken as being a corner lot in estimating the space which must be left unbuilt upon.

Wooden tenements may not exceed two storeys in height; if they exceed in size 30 feet x 60 feet, the interior must have fire-proof walls, they may not be built nearer than within three feet of the lot line. There must be either a yard or public lane in rear, in any case, there must be a small yard for garbage, etc. All courts must be open to the sky, the minimum areas of such courts, both inner and outer, being clearly defined. Bottoms of all courts and shafts must be paved and shafts ventilated by means of ducts; walls of courts and shafts must be light in color, and so main-

tained. All rooms must be at least 9 feet high, except attics; basement suites must have at least 4½ feet of their height above the ground; no basement room may be occupied without a written permit from the Health Officer; every room must have a window opening directly to the outside air, such window to be of equal size to at least one-tenth of the floor area of the room; storm sashes to have ventilating slides at least 80 square inches; provision is made for the proper lighting of halls, both by day and night. A bath room is required for each suite, except in cases of single and double room suites, for which there must be one W.C. and a bath for every three rooms on each floor; provision is also made for privacy, drainage, fire escapes, etc.

This new by-law, taken in conjunction with the Good Plumbing By-law previously enacted, is fairly satisfactory. There are also a number of valuable clauses to be found in the Manitoba Public Health Act, which deals with buildings, particularly as regards the construction and occupation of basement and cellars; the size of windows and arrangements for opening same; which gives immense power to the Health Departments of Manitoba in dealing with sanitary building construction.

Take the following three sections for example: Section 396. "No person shall erect or occupy a dwelling house in which one or more rooms intended to be occupied are not provided each with a window opening directly into the external air, either into a street or public square, or into a yard or other vacant space. The glass area of any such window shall never be less than one-tenth of the floor area of the room."

Section 398. "No building shall be occupied as a dwelling which has not double sash windows, capable of being opened at top and bottom *on at least two sides of such dwelling.*"

Section 399. "Cellars shall not be used for either day or night occupation. For the purpose of this Section, a cellar is any basement of any house or building whatsoever, more than one-half of the height of which under the ceiling is beneath the surface of the ground around the building, and whose light area is not equal to one-tenth of the surface of the floor."

The cellar section in the Saskatchewan Act requires two-thirds of the height of the room to be above ground level, but applies only to sleeping rooms in tenements, whereas the Manitoba Act applies to "any house or building whatsoever." Considerable divergence of opinion is to be found on the subject of the minimum size of building lots. At the meeting of The National Housing Association of America, which was held in Philadelphia last year, very favorable consideration was given to the claims of what is probably the smallest building lot to be found common in any city, size 14 feet x 41 feet. There are, however, in that city many hundreds of two-storey houses, erected in terraces on lots of this size, and some of the ablest speakers appeared to consider them fairly satisfactory, provided that provision is made for open spaces or common garden allotments in the rear of the houses. The price of land in Western Canadian cities is not yet so high that we should consider subdivisions providing for lots of such inadequate proportions.

Prices of city lots, however, continue to climb, and one of the results has been to crowd our dwellings too close together. In many cities whole streets are built up with most desirable and comfortable dwellings, but erected close together on 25 foot lots. As the space between such homes cannot average more than four feet, and is often considerably less, the result is that such houses must be so constructed as to have all their windows on front and rear only, and the spaces between the houses is simply wasted, being utterly useless for obtaining either sunlight or ventilation, to say nothing of the tremendous fire risk caused by such close proximity of so many frame houses.

For Canada we should advocate a minimum frontage of at least 33 feet and 50 feet would be preferable. One noted town planning expert gives as his opinion that no space between dwellings of less than 15 feet in width is of any use, and that if such a space cannot be obtained it is much better to build either terraces or semi-detached houses.

3. *Insanitary Housing Conditions in Older Buildings.* There are to be found in all larger cities numbers of dwelling houses occupied as tenement houses, which were converted to such uses prior to the passing

of Housing Laws, and, needless to say, the conditions obtaining in these older tenements are not a credit to any city. Some of the defects encountered are: Dilapidated condition, over-crowding, inadequate plumbing fixtures (frequently only one W.C. and one sink), defective plumbing and drainage, want of cleanliness, vermin, lack of sufficient natural light, insufficient height of rooms, the use of many unvented gas stoves, generally in rooms used also for sleeping purposes; the practice of taking in boarders resulting in over-crowding, the lack of privacy resulting from the promiscuous use, by both sexes, of sanitary conveniences, lack of adequate ventilation, etc. It is not necessary to describe in detail such houses, every large city has numbers of them, and Sanitary Inspectors know them only too well. All that can be done is to close them up if they become too insanitary, especially basements and attics occupied as dwellings; to require that the owner instal additional plumbing fixtures, so arranged that each family can obtain access to such fixtures without passing through rooms occupied by other families, and without having to go out of the house and re-enter by another door, as is frequently found. The existence of such houses makes it difficult for a Health Officer to control outbreaks of communicable diseases, owing to the difficulty of isolating patients therein, which is frequently unavoidable owing to the fact of there not always being room enough in the hospitals.

The mortality records of such dwellings are generally high, more especially infant mortality, and municipalities all over the world are finding out from actual experience that the continuation of such insanitary conditions must be put an end to even if somebody's corns are stepped on in the process. The amount spent by municipalities and tuberculosis societies and charity organizations in fighting such conditions increases yearly and will not cease until radical improvements have been made.

If these older buildings were all that Health Departments had to contend with it would be bad enough, but a more serious condition exists in the silent, stealthy, continuous way in which in all our large cities buildings erected for and formerly occuped as dwellings for one family only are being unlawfully converted into tenement houses without the formality of obtaining a permit from the Building Department, and without attempting in any way to effect any alterations or improvements which might render them more suitable for the purpose. The whole process consists in the taking in of extra families.

The Health Department of the City of Winnipeg has discovered and dealt with hundreds of cases of this sort. Here are one or two typical instances: (a) A ten-roomed house, until recently occupied by one family only, contained nine separate tenants (only one of whom had two rooms), each family living independently and doing their cooking on gas stoves, and eating and sleeping in the one room. Not one of the nine gas stoves was provided with any hood or pipe for carrying off the products of combustion. Imagine the condition of the atmosphere in these rooms, containing from 500 to 1,500 cubic feet each, when fully occupied in the winter and with storm doors and sashes on all openings to the house. Only one W.C. and one sink was provided for use of all these tenants.

(b) A terrace of five houses. Gas fixtures installed in almost every room; 35 rooms; 26 separate tenants (15 of these being families); 17 of these tenants had only one room each. Ten gas stoves, some of them in dark upper halls, and with no ventilating flues. Only four W.C.'s and five sinks for the use of all the tenants. All this done without the knowledge or consent of either the Building or Health Departments. Many more instances could be given, but time presses.

This conversion of dwellings into tenements is further aggravated by the fact that many of the sub-tenants take in boarders. In many instances the persons who lease these houses and sub-let them make a very handsome profit in addition to living rent free themselves. One house rented at $50 a month was sub-let to eight tenants, and brought in $150 a month. The lessee herself put a carpet on the cellar floor and lived down there until ejected by the Health Department.

This process might be termed the "farming-out" of houses, and should be stopped as speedily as possible. The ultimate effect is not to provide cheaper dwellings for

the working man, but to raise rents all round, for the owners of these buildings, becoming aware of the profitable business carried on by the lessees, proceed to demand a higher rent and the lessee in turn collects this increase from the sub-tenants. The owner rarely attempts to collect rents from the separate tenants, as that might render him liable to prosecution for converting the building to the uses of a tenement.

It is certainly most unfair to compel persons erecting new tenement houses to comply strictly with the requirements of the by-laws governing tenements if this continuous unlawful conversion of dwellings into tenements is to be permitted to continue. The City of Winnipeg is dealing with such cases as fast as the number of Inspectors available will permit, and promptly serves closing notices requiring that the house shall be restored to its original status of a one-family house; but the evil is very prevalent and in many cities it is to be feared that nothing at all is being done to prevent this process, which will surely in time result in the making of vast slum districts. Now is the time, whilst our towns and cities are young, to stamp it out.

The conversion of portions of stores into dwellings is nearly as bad. Some very bad instances of this have been discovered. The following is given by way of example: A small four-roomed cottage in front of which had been built a store or workshop. The partition between the shop and the bedroom in rear, in which slept six children, was of wood and only extended to within two feet of the ceiling. The size of this bedroom was only 12′ 6″x 8′ 6″=850 cubic feet (large enough for two adults only). The other small bedroom containing 544 cubic feet of air space was occupied by two adults. Both rooms were, therefore, overcrowded. In addition to this the ventilation was grossly inadequate. The rooms in rear of the store were insufficiently lighted, there being no outside window, and the only light admitted was such as filtered over the partition from the shop in front. In the shop and in full view from one of the principal thoroughfares, there went on daily the pressing, tailoring, fur repairing, etc., from the houses of some of the best citizens.

Now the conditions described above were quite bad enough of themselves, but to make matters worse, four of the children of the proprietor were stricken at short intervals with scarlet fever. As each case developed it was promptly removed to the hospital, and the premises disinfected. As soon as possible vacation as a dwelling was required.

Time will not permit of more, although many cases could be cited. In order to prevent this use of stores as dwellings the Health Departments in Manitoba frequently take advantage of a section of the Public Health Act already quoted, which requires double sash windows capable of being opened both top and bottom on at least two sides of any building used as a dwelling. Most stores can be ruled out as dwellings under that clause as they have only the plate glass windows of the store, which will not open, a transom over the front door (frequently immovable), and windows in the rear, frequently only single panes set high up in the wall.

Now, a few words as to the problem of room overcrowding. Most States and Provinces now have statutes intended to prevent the overcrowding of sleeping rooms, and which require a minimum cubic air space per head. Sometimes a minimum floor area is also defined and regulations as to space between beds. Four hundred cubic feet per adult is the standard set by the majority of laws, although some exceed this, as that of Denver, Col., which requires as much as 700 cubic feet per head. It might be pointed out that the mere requirement of a minimum number of cubic feet of free air space per head is not by any means sufficient and is no guarantee that the atmosphere of the sleeping rooms will be of the requisite purity. What is needed, in addition to an increase to at least 600 cubic feet per adult, is some further regulations requiring the frequent changing of the air in such rooms, by either natural or mechanical means.

In Winnipeg, owing to the immense number of foreign-born citizens, the overcrowding evil is a very real one. It is true, that by dint of stern repression and frequent prosecutions, the Health Department has succeeded in eliminating gross overcrowding such as used to be frequently discov-

ered, but even now some hundreds of cases are dealt with every year.

The city has been very fortunate in receiving the whole-hearted support of her Police Magistrates, who, after personal inspection with the officers of the Health Department, have become convinced that it is necessary to deal very firmly with offenders, as in the great majority of cases the overcrowding is not due to need, but to greed.

The very plenary powers contained in the Manitoba, Saskatchewan and other Health Acts giving power of entry for night inspections require, of course, to be exercised with great discretion. In Winnipeg the practice now is to visit premises in the day time. The Inspector, who speaks the various languages, makes enquiries, measures the rooms, affixing in some cases small cards indicating the number of occupants permissible. If too many beds are evident, he orders their removal. Again he visits the premises, still in the day-time, and if the beds are not removed, he then pays a surprise visit at night with other English-speaking Inspectors. If any offenders are found on this inspection, they are summoned.

A great deal of bunkum is talked about night inspections. With the extraordinary conditions obtaining in our Canadian cities, owing to the influx of immigrants, some such system is absolutely necessary or conditions would rapidly become intolerable. If administered with tact, the system have no terrors, except to those with a guilty conscience, and no consideration need be shown for those who make a living by preying on the health of their fellow men. Even with the system now pursued, and in spite of repeated warnings, much ingenuity is displayed in evading the officers, such as climbing out by the windows, the hiding of men in cellars, toilet rooms, under beds, and even in covered laundry tubs.

Having hastily gone over a great deal of ground and discussed in a very brief manner many phrases of the housing problem, it only remains to add a few suggestions by way of remedy. Some of the measures suggested are as follows:

(a) A social survey of each city in order to ascertain definitely the conditions obtaining. Some cities have had partial surveys made and the statistics gathered in such surveys show very great need for further investigation. The surveys should be made by Health Department officers, and the statistics once obtained would be most valuable to Health Departments in dealing with housing problems and arousing public sympathy, and obtaining that support by public opinion which is vitally necessary to the success of any forward movement.

(b) The enactment of adequate and up-to-date housing laws, and the rigid enforcement of same. Such laws should provide for at least 600 cubic feet of air space per adult in sleeping rooms and better methods of ventilation in addition.

(c) Adequate staffs for both Building and Health Departments, the one to ensure that all buildings are erected with due regard to sanitary construction, and the Health Department to keep vigilant watch in order to prevent the unlawful conversion of dwelling houses into tenement houses. A force of men especially trained for this work is needed.

(d) The enactment of by-laws requiring the licensing and regulation of all common lodging houses and the registration of other houses where boarders or roomers are taken.

In regard to common lodging houses, there is a lack of accommodation in many Canadian cities for the large number of single men, or men with no families in this country, who, after working on farms, public works or railways during the summer, spend their winters in the cities. Such lodging houses must be carefully planned, both as to methods of construction and operation. It is essential that the various nationalities must be provided for separately as they will not mix. If more clean and sanitary lodging houses were provided they would go a long way towards reducing overcrowding, as in the absence of a sufficient number of such places the single men are taken to board with families who have no more room than is necessary for themselves.

Ordinary boarding houses, when say five or more boarders are kept, should be registered and under supervision, to ensure cleanliness and prevent overcrowding.

(e) In many cities there is a continual shortage of small dwellings of a rental

within the reach of the working man's purse. In some towns scarcely any small cottages are being built, largely because the loan companies will not lend money on this kind of property. The result is that many persons are obliged to build larger houses than they need for their own families, and in order to meet expenses to take in boarders or even other families.

Experience has shown that there is room for the formation of semi-philanthropic companies who will assist in this great work of securing for the workers individual houses of a suitable size, clean and sanitary, and withal not too costly. The City of Toronto has made a good start in this direction. Let us hope that Western Cities will not be behind-hand in dealing with a question of such vast importance to the welfare of the Dominion, viz., the proper housing of its inhabitants.

BRIEF MADNESS.

Anger.

Diagnosis—

The moment we feel angry in controversy we have already ceased striving for truth, and begun striving for ourselves.—Carlyle.

Remedy—

Let this truth be present to thee in the excitement of anger, that to be moved by passion is not manly, but that mildness and gentleness, as they are more agreeable to human nature, so also are they more manly.—Marcus Aurelius.

ECONOMIC AND RACIAL WASTE THROUGH INSANITARY HOMES AND WORKSHOPS

By THOS. M. MOLLOY

Secretary, Saskatchewan Government Bureau of Labor

Read Before the Third Annual Congress of The Canadian Public Health Association, Regina, Sask.

REALIZING as I do the importance of the subject assigned to me together with the fact that many among you by your especial training and years of experience in the field of social welfare, have become master minds in this particular work, it is with considerable diffidence that I propose to read a paper on the above subject.

"Economy and Social Waste Through Insanitary Homes and Workshops" means in the last analysis conservation of human efficiency, a subject of first importance to any nation and one worthy of the most careful and deliberate consideration.

Despite our wealth of natural resources the Federal Government at Ottawa has seen fit to establish a conservation commission, for it is recognized that we cannot forever continue to use up our forests, our waters, our coal mines, our wheat fields faster than their product is replenished. But of what use is the most perfect system of conservation of these material resources if there is no conservation of humanity? It is economically sound and ethically unassailable that labor is necessary to the production of all value. And a man who dies of tuberculosis, typhoid or lead poisoning, is just as dead as one who has perished by the slower process of starvation or cold. It is true that conservation of human energy has been attempted, and is today being carried on by an ever-increasing number of manufacturers on a greater or smaller scale, but until some general and national scheme backed by adequate legislation is undertaken but little can be accomplished in so far as the general class of wage earners is concerned.

"Factory Legislation," to use the earlier English term, has aimed particularly at the protection of the workers from insanitary conditions of employment.

Long before any considerable number of people admitted that legal regulation of working hours and of wages were justified, there was a very general recognition of the fact that the worker was entitled to a decently safe place in which to labor. In no province of Canada is there a factories act which goes farther than to say that the owner of the factory shall at all times keep the factory in a clean and sanitary condition, and free from affluvia arising from refuse of any kind.

The sweeping character of this provision is its own undoing, being confusing, indefinite and full of loop holes. This class of factory law places no duty upon the employer to provide protection till he is ordered to do so by an inspector. When one considers the area to be covered in our industrial centres by a limited number of inspectors, the vast majority of whom have no technical training in sanitation, hygiene or medicine, it can easily be seen that the great army of industrial workers in Canada are likely to receive entirely insufficient protection from laws in this class.

In Europe it has long been established that the morbidity and mortality of wage earners is high or low in almost exact proportion as the sanitary conditions are those of relative purity or impurity, of wholesomeness or pollution. Grant the plea of a certain class of employers that we cannot "Germanize" or in other words adopt European standards in the industrial conditions of Canada, and we are face to face with a most important and too long delayed part of your work. I

refer to the lack of authentic records of intensive study of our own economic conditions.

This is a point I wish to emphasize and make clear; and that is that practically all standard works of reference on occupational disease are by English or continental authorities. Where can we find a better equipped or qualified organization to undertake the investigation and compilation of statistics upon this subject than the Canadian Public Health Association, and where is there a greater opportunity to promote the public health than amongst the wage earners of this country?

It is now a generally accepted principal of modern sanitary science that a large amount of sickness is preventable, and that the average duration of life can be materially prolonged by deliberate and rational methods of personal, social and industrial hygiene. It has been authoritatively stated that the possible reduction of illness among wage earners is about twenty-five per cent.

We have no official sickness statistics for Canada or any part thereof. If we base an estimate on the figures supplied by Germany and the United States, and take into consideration that Canada has not the industrial population proportionately of the two countries just named, then a conservative estimate of our wage earning population is approximately 2,500,000 people, in a census enumeration of about 7,500,000.

Estimate of sickness and its cost among occupied males and females in Canada. (2,500,000.)

A. Estimated number of cases of cases of sickness on the German basis of 40% of the number of persons exposed to risk 1,000,000

B. Estimated number of days of sickness on the German basis of 8.5 days per person per annum 21,250,000

C. Estimated medical cost of sickness at $1.00 per day..$21,250,000

D. Estimated loss in wages at an average of $1.50 per day for 6-7 of the 21,250,000 days $27,321,427

E. Estimate of the economic loss based on the German standard of fifty cents per lost day .....$ 9,107,427

F. Total estimated monetary loss to the country based on German estimate $57,678,854

A saving of 25% of which would equal an annual saving to the workers of Canada of $14,419,713

So much for the economic or monetary loss to the country. Regarding the racial loss, I submit without comment the result of an investigation conducted by Professor Lewis of France, and published by Sir Thomas Oliver, M.D., F.R.C.P., in the United States Bureau of Labor Bulletin of July, 1911:

Result of 32 Pregnancies of 7 Women Married to Men Working in Lead.

Number of Women.	Abortions.	Still Births.	Deaths in the First Year.	Second Year.	Third Year.	Later Years.	Living Children.
1.....	1	.	.	.	.	.	.
1.....	1	1	.	.	.	.	.
1.....	2	.	2	.	.	.	1
1.....	3	.	1	.	.	.	.
1.....	1	.	.	2	.	.	.
1.....	1	.	3	2	5	.	1
1.....	2	.	2	.	.	1	.
Total.....	11	1	8	4	5	1	2

Each of the women had aborted. Out of 32 pregnancies there were only two living children.

Whilst the foregoing awful statistics have reference to lead poisoning, it must be remembered that it is not essential that the worker be engaged in the actual handling of lead to become afflicted; painters, printers, plumbers and metal

working tradesmen of nearly all kinds are exposed to lead poisoning.

Considering the foregoing preventable monetary loss of fourteen and a half million dollars and which I believe is a conservative estimate, together with the awful racial loss just cited not to mention the persons afflicted with nervous and mental disorders directly traceable to the unhealthy environment of their parents, and I believe we have evidence enough to warrant the appointing of a special committee to investigate, and suggest adequate laws for the proper protection of the wage earners.

The Metropolitan Life Insurance Company spends annually $1,200,000 on welfare work amongst its 15,550 employees —and it pays. The International Harvester Company, the United States Steel Corporation, the United Shot Machinery Company spend thousands of dollars annually, and by so doing the last mentioned company has reduced the number of industrial accidents in their plant by seventy-three per cent.

Remember that industrial accidents, an ever fruitful source of loss to our wage earners, are frequently caused by bad sanitary conditions, and that purely industrial accidents have not been taken into consideration in the preparation of this paper.

The fact that some of the largest and most hard headed business concerns give a great deal of attention and large sums of money to the promotion of sanitary and healthy conditions for their employees, can be accepted, I think, as proof positive that from an employer's point of view it is indeed a good policy. There is nothing that will do more to retard a growing business than to have the clerks or mechanics engaged in it continuously quitting their positions, laying off on account of sickness, and worst of all, making mistakes and errors, both in judgment and in act, nearly all of which can in many cases be traced to poorly lighted, poorly ventilated or unsanitary work rooms.

Standing today at the very door of a vast field of opportunity, there is stretching before the people of this country a possibility of industrial achievement unparalleled in the history of the world With our untold wealth of natural resources, ideal climatic conditions, there would seem to be no power on earth that can check our phenomenal advancement. Nevertheless, I feel that we as a nation are not giving enough consideration to our great asset, human efficiency.

In order to progress as we should, and in fact must if we are to take our proper place among the industrial nations of the world, then the maintenance of human efficiency at the highest standard must be the watchword, and this can only be accomplished by a well organized and determined effort to maintain our workshops and homes in a perfectly sanitary condition.

THE CANKER OF UNTRUTH.

Lying.

Diagnosis—

The essence of a lie is the intention to deceive.—M. Prideaux.

Remedy—

A lie should be trampled on and extinguished wherever found. I am for fumigating the atmosphere, when I suspect that falsehood like pestilence, breathes round me.—Carlyle.

TOWN PLANNING AND ITS INFLUENCE UPON PUBLIC HEALTH

By A. L. FAVELL, Architect, North Battleford, Sask.

Read before the Third Congress of the Canadian Public Health Association, Regina, Sask.

IN assuming that the primary object of this Association, now assembled in conference, is to discuss all problems relating to the health of the community at large, and to endeavor to secure perfect health conditions, I judge I am correct. With this end in view we hope to formulate, out of the ideas and schemes offered and propounded by the various delegates, a definite plan of operation. It is only by the acceptance of results, positively established as undeniably correct, and which are the outcome of considerable experiment and experience—by the acceptance of the evidence given at such assemblies as these, and the determination to apply the knowledge gained, that we can hope to secure the health conditions so necessary to our lives and that of our fellow man. Everything is worthy of consideration that has bearing upon the health of the public and the discussions that will arise at this conference should have the closest attention. To be happy is to be pleased, to be pleased is to be contented, and for our contentment we must have health. A healthy community is therefore a happy community and it is the duty of each and every individual to see that those things, which produce health and happiness, are provided.

We must secure those conditions which raise the standard of living, reduce sickness and mortality, and improve the morals and the efficiency of the people. How to secure these much desired conditions is the purpose of this conference, and without doubt during the session valuable work will be done and great advancement made.

It is my purpose to show that to have health we must have healthy surroundings, and to have healthy surroundings is to possess sound sanitary conditions. Thus, sound, sanitary conditions form the whole success of any scheme designed to secure the health of the public, as the whole stability of the race depends upon healthy conditions.

The true object of a town plan is to provide a domestic condition for the people in which their physical health, their morals, their character and their whole social condition can be improved, therefore it is necessary to so plan a new city and so remodel our existing large cities to ensure these conditions being obtained. In old world cities throughout Europe, it has been proven beyond doubt that it pays to adjust a city to its industrial, social, recreational and educational needs, irrespective of cost and vast sums are now being expended to make cities sanitary, beautiful and convenient. Without these conditions we can never hope to secure a healthy community. To have a city thoroughly sanitary, beautiful in design and with every possible convenience is to have a perfect city, but such a condition cannot possibly be secured without careful planning and forethought.

It appears strange to me that cities have been allowed to grow up without due regard to what they would become in future days. In what other branch of life do we proceed with a work unless we have a set plan and a clear conception of the finished product? In every other branch of life we design our work before execution. Then why not our cities? Think of the huge sums that are now being expended to right the wrongs of earlier days, of the fearful percentage of sickness and mortality, and of the awful squalor and misery so many are living in, in the slums of these huge, badly conceived cities. Think of the deterioration of the race at large and then consider how much of this could have been avoided by looking ahead and providing for every

extension and for the health and convenience of the people.

To permit the cities in this new country of ours to grow up without due regard to their future and to that of the people, to allow them to become as many old world cities are today, would be a crime. Here, comparatively speaking, we are on virgin soil and our cities are in the making. We know the requirements of a city and city life and have at our command the experience of the older cities of the world that are now being adjusted under enormous difficulties and at an enormous cost. Knowing all this, why not at once apply this knowledge and secure that every city in Canada will grow up a city sanitary, beautiful and convenient?

To provide sound sanitary conditions we must secure that a trinity of necessities are provided. Sunlight, fresh air and vegetation. An adequate supply of these can only be secured by (1) limiting the overcrowding of buildings upon the land; (2) by a proper distribution and arrangement of such buildings, and (3) by establishing proper relations between such buildings and the system of sewerage and water supply.

The site for any city should be selected with the greatest care. The avoidance of flat areas and the selection of rising ground should be a religion. Land possessing the natural features likely to lend a charm to the town should be fixed upon. The site beautiful is the key note to the city beautiful and care should be taken to preserve all natural beauty spots. To be amidst beautiful surroundings of which each unit is a well thought part of the whole scheme, is to everyone an education. As our latent, nobler and better feelings arise at the sound of beautiful music or the inspection of a fine picture, so will our characters be moulded by living amidst beautiful surroundings.

How can the worker, living in the squalor and unsanitary conditions of great city life, give his best to the world? It is impossible. Take him away from such fearful, heartbreaking conditions, place him in possession of a home, sanitary, wholesome and amidst natural beauty and you increase his efficiency and the world is better off for his services.

Look at the condition of children born and reared in London slums, in an alley where the sunlight never penetrates, where the grass never grows, and where, instead of the sweet scent of vegetation poisonous atmosphere exists. Can we expect these children to become healthy and strong? Superior to the last generation? No, impossible. From the date of birth they are degenerate, there is no education in their surroundings and they grow up in similar condition to their parents. Thus no progress is made. Let us therefore exert every effort to secure that our children enter into conditions of city life which will produce a nobler and healthier than the present one and do not repeat the mistakes that the large cites of older countries are now suffering from.

I venture to say, sir, that a city correctly designed and the development of the city carried out strictly upon the lines laid down by the plan, will do much to uplift the standard of health and efficiency of the people generally.

A city convenient is a third aspect of the case. How is it possible to provide adequate means of communication between one part of the city and another unless we know our requirements ahead? In all cities the civic centre, the industrial district and the residental areas should be determined. Decide upon the situation of the schools, the parks, recreation grounds, etc., then plan the means of communication, the roads and streets, with due regard to the convenience in reaching same. Think ahead of the recreational needs of the city populace and provide such in convenient places. A correctly designed city will be an economy, all waste will be eliminated and taxation reduced to a minimum. This is another feature which will aid in the contentment of the residents of any city.

In summary we find that correct city planning secures and includes everything which bears upon sanitation, beauty and convenience. These conditions provided and we have gone a long way to securing a higher standard of health for the community at large and laid the stepping stone to a higher and nobler life for the whole race.

The careful planning of cities has long been recognized as necessary and almost every city of any size, particularly in Ger-

many, has its expert or expert city commissioners. If we in this country intend that our cities will be as we all would desire them, now is the time to take the matter in hand, unless we do so immediately and each city decides upon a definite plan, our cities will assuredly fall into the same errors and become as those cities which we condemn.

It is the duty of every municipality to at once enter thoroughly into the question of city planning, to decide upon a plan and to proceed with the city's development on scientific lines.

It would be difficult to find two cities, correctly designed, which would be on the same plan. Each city would vary according to its own particular need. Yet we find practically all our cities being laid out on the same chequer board plan irrespective of the possible future requirements—industrial and social.

To go into details as to the essentials of a city plan, and to discuss layout, is not my purpose. City planning is a science and bound down by rules as is any other work. I have but tried to add my voice to the general cry for scientific development, and to show how such would aid in securing a higher standard of public health. I could quote you pages upon pages of statistics in support of my contention and give you accounts of what garden cities and garden suburbs have done from the health standpoint, but time will not permit of this and no doubt you are familiar with such records.

Our period of usefulness in the world is determined. Soon we give way to our successors, who take up our works—good and bad. Our just and true works they applaud, proceed with and extend. Our careless works and failures result in condemnation. Our work must be progressive. Do not let our successors enter upon a heritage of trouble, which will stem the tide of progress and put back the great day when everything possible that can be done in securing the health of a nation is accomplished.

Let us ever remember that our occupancy of the world is only for a short span of time, and that our present care is for the nation's asset, the rising generation, and to that generation to follow, we must give an account of our works good and bad.

In conclusion allow me to remark that it is the purpose of everyone here assembled to discuss means of improving the standard of public health, and I contend that correct city planning and its execution will have an enormous influence, and will do much to secure the health of the people.

MORAL NEAR-SIGHT.

Selfishness.

Diagnosis—

"This is MY dog," say children; "That sunny seat is MINE." There is the beginning and type of the usurpation of the whole earth.

Remedy—

It is only with Renunciation that Life, properly speaking, may be said to begin.—Carlyle.

VETERINARY HYGIENE AND PUBLIC HEALTH

By CHAS. H. HIGGINS, D.V. Sc., B.Sc.

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Read Before the Third Annual Congress of The Canadian Public Health Association, Regina, Sask.

VETERINARY hygiene is an ancient calling, and its recorded history antedates that of hygienic effort in any other line of endeavor. It is true that there is a record in Hindu medicine having some allusions to hygiene, and there are also references* which indicate that the early Egyptians had a knowledge of this important subject. Certain food standards and the necessity for maintaining animals under proper conditions at a suitable interval from camps occupied by human beings were prescribed by the Mosaic law.

Columella, however, in the middle of the first century, pointed out the requirements for maintaining animals in health and among these requirements the sanitary arrangements were considered of the utmost importance†. Since the time of Columella, history is replete with reference as to the desirability of maintaining animals under hygienic surroundings, but the necessity seems, in the majority of instances to have been a matter of record rather than one of practice until comparatively recent times, save in those cases where animals were allowed practically free range out of doors.

In Canada the progress of veterinary hygiene has paralleled the progress in veterinary education. It is significant to note in this connection, however, that a two year veterinary school was established in Toronto in 1862, (five years after the organization of the first veterinary school on this continent), while three years later a three year school was organized in Montreal which became affiliated with McGill University. A school conducting its work in French was organized in 1886, affiliated with Laval University. Shortly after the inception of the three year course in Montreal, an extension was made in the curricula of the veterinary schools in the British Isles, and while veterinary education in Canada is not now established on a plane as high as may be desired, great strides have been made and we anticipate much from the progress already accomplished.

I am sufficiently optimistic to believe that veterinary education will some day require a much more strenuous apprenticeship than is now demanded, and the indications are that the time is not far distant. This apprenticeship will doubtless exceed that required in human medicine, as the field is greater, the conceptions broader and the necessity of being conversant with the vagaries of a number of species of animals, involves a closer application if the outcome is to be satisfactory.

Recent years have witnessed a marked evolution in our conception of the relationships between human and veterinary medicine. With our increased knowledge we find that the one is inseparable from the other and that the study of comparative pathology has caused us to change

*—Smith, Maj. Gen. F., C.B., C.M.G., F.R.C.V.S., "The Early History of Veterinary Literature and its British Development." Jour. Comp. Path. and Therap. Vol. xxvi, 1913. In this (page 137), a reference is made to an Arabic translation of the ninth century under the title of Nabatheen Agriculture, which recommended, "a medical and veterinary officer of health for each town." The Nabatheens were the primitive inhabitants of Chaldea.

†—Ibid. This is the first detailed and authentic record relating to veterinary hygiene which history has preserved to us intact.

our viewpoint with respect to contagious diseases, but to this reference will be made later.

Hygiene is defined by Gould as, "The science that treats of the laws of health in the broadest sense." It is therefore, evident that veterinary hygiene is a subdivision or a specialization of hygiene, first, as related to the health of the animals themselves, and second, the relationship which the health of animals bears to the health of the human family.

Veterinary or animal hygiene is a very broad subject and deals not only with the sanitary surroundings amidst which a few or many animals are kept, but also, the sanitary handling of the products derived from animals such as milk and meat. That the immediate surroundings are important from the purely veterinary viewpoint is apparent, when we know that filthy surroundings, lack of sunlight and fresh air assist in the propagation of the contagious diseases of animals, while cleanliness and an abundance of fresh air and sunlight are the greatest enemies of contagion. Not only is veterinary hygiene concerned with the animals themselves and their diseases, but the hygienist who specializes on animals must necessarily interest himself in the diseases communicable from animals to man, either by direct contact with the animals, their products or some intermediary bearer. It is thus apparent that the obligations imposed are not associated with a single line of endeavor, therefore the vegetarian who would follow sanitary work must be educated, not only in the fundamental rudiments of the profession to which he is allied, but also in the various sciences which offer detailed information to so guide him that any duty to which he may be assigned can be undertaken with a full knowledge of the outcome should he fail to observe even the slightest detail. It is the full realization of these considerations which has prompted me to lay such stress on the necessity for a higher conception than has heretofore been accorded by our educational institutions to the requirements demanded by the public or veterinary hygienists, both before and after matriculation.

That diseases of animals may be communicated to man has been known from time almost immemorial. The Nabatheens‡, primitive inhabitants of Chaldea, considered it desirable that there should be "a medical and veterinary officer of health in each town," and we in this enlightened age are just commencing to see the advantages to be gained by the employment of a veterinary as well as a medical officer of health, as there are specific duties which properly fall within the purview of each and for which each should be specially trained. Moses knew of the existence of tuberculosis in cattle and a certain system of meat inspection established at that time is still practised in a modified form. Notwithstanding this historical reference, the arguments are legion for and against the transmissibility of this disease from animals to man and visa versa. Recently Orth*, before the Berlin Medical Society, gave very strong evidence indicating that tuberculosis of animals was communicable to, and frequently is, the undoubted source of infection in human beings. Schroeder has reported that an experimental animal infected with living tubercle bacilli of human origin in the udder and in which no lesions could be detected at autopsy, continued to give living virulent bacilli in the milk drawn from the quarter in question for a period of seven months. This finding emphasizes the danger which may follow the attempt to immunize bovines against tuberculosis should tbe bacilli prove to be non-pathogenic for the animal in question and live as saprophytes in the udder.

Hygienic effort is based on scientific research and scientific research knows no school save truth. Preventive hygiene likewise knows no school and some of its most ardent devotees and prominent advocates have not been allied with any school of medicine. Pasteur, by training a chemist, was a human and veterinary hygienist of the highest order and his researches in biology were a more potent factor in elucidating the means of preventing or controlling disease than the in-

‡—Ibid.

*—Orth, Transmissibility of Bovine Tuberculosis to Man. Berlin Medical Society, Feb., 1913. Reference Jour. A. M. A., March, 1913.

vestigations of any worker up to that time. His experiments in dealing with anthrax and his success in providing an attenuated vaccine have been the basis of much progress in producing immunity or protection against various diseases of animals and man, some of which are intercommunicable. Inoculation to prevent the development of rabies in exposed individuals was originated by him, yet all his work with this disease was based on the immunization of fowls against chicken cholera. The attenuated chicken cholera organism was secured, if we may give credence to unpublished reports, by exposing the culture for a considerable period to air and this was learned wholly by accident. In judging the work of Pasteur, it must be remembered that at the outset, he did not have the efficient apparatus which is available to-day, nor did he have the various solid media for his laboratory work which are considered indispensable in the most primitive laboratory of our time.

Food supplies must be effectively supervised and prevented from adulteration. This duty is more essential to-day than ever before in the history of the world, a result of the ease with which an article may be transported from one portion of the earth's surface to another. The danger is increased many fold owing to this very circumstance. Our existence is thereby dependant in a greater degree than formerly on the co-operation of governments, the experts of which certify to the healthfulness of the animals before slaughter, their freedom from dangerous disease conditions after slaughter, and that the whole process, including transportation, is carried out with due regard to proper sanitary precautions. Similar forethought must be exercised over products other than those derived from animals. In their broadest conception, these duties must naturally fall to experts in veterinary hygiene and sanitation who are best fitted to supervise the various processes during their preparation or manufacture.

Epizootic disease in animals may be the cause of epidemic disease among members of the human family, and, therefore, the veterinary hygienist has a very important and responsible duty to perform if he is to accomplish his full mission in the protection of individuals belonging to the human race.

Many cases of glanders have been recorded among human beings, usually a direct result of caring for a horse whose malady was either improperly diagnosed or of such a mild type that suspicion was not attracted to it, until it was traced from another source, or by other horses that had been exposed and contracted an acute type of the affection. In some instances the veterinary inspectors of our own Health of Animals Branch have been the ones to diagnose this affection in human beings who were manifesting a variety of symptoms peculiar to the disease which were puzzling to the medical practitioners. That the medical practitioner did not recognize the disease is not surprising, as his opportunities for observing the peculiar symptoms common to this affection in animals and man are very limited, yet the veterinarian in the past has had ample opportunity to see the disease in both species on various occasions.

Without doubt, the greatest service, from the viewpoint of the relationship of veterinary hygiene to public health in the preservation of human life was the demonstration by Smith and Kilborne in 1894 that Texas fever was conveyed by an intermediary bearer, the cattle tick (Boophilus annulatus). While this finding had no direct bearing on the healthfulness of human beings, the disease in question not being transmissible to man, yet its ultimate bearing was of more than ordinary interest, for this finding demonstrated the possibility of an intermediate host in other diseases. This feature was soon made use of in a very startling manner as Reed, Carroll, Agramonte and Lazear demonstrated in 1900 that a similar agency was played by the mosquito in yellow fever. The finding of these investigators was suggested as early as 1881 by Finlay, although the opinion formulated by him was wholly the result of circumstantial evidence and close observation. In its demonstration nine experiments were performed without success, but the tenth of Carroll, resulted in a severe illness with yellow fever after he permitted a mosquito to bite him and he died as a result several years later. On Sept. 13th,

1900, Lazear, working with yellow fever noticed a stegomia on his hand and deliberately allowed it to drink its fill. Five days later he became ill and died after a violent and short illness. It was also shown at this time that contaminated clothing exerted little if any effect in the transmission of this disease. The conquering of this one disease, a direct result of veterinary hygiene measures has transformed Cuba from a pest hole to a health resort. The same finding enabled the conquering of malaria by Ross a little later, and the localities once decimated by this mosquito borne disease are now habitable for human beings. The knowledge of how to deal with these two diseases, a direct result of veterinary hygienic effort has rendered the Panama Canal zone habitable for whites, the death rate comparing favorably with the most hygienic cities of the world. To illustrate the cost, it has been estimated that it requires an expenditure of $2.43 to keep each individual healthy in the Canal Zone, while it has been reported that the South African war cost Britain $40,000 to kill a man.

A similar agency, that of an intermediate insect host, is now known to be necessary for the direct transmission of a number of diseases. Certain parasitic diseases undergo a portion of their development in animals and cause serious disability when completing the final cycle of their life history in man. Particular instances of this are observed with the pork and beef tapeworms. Such infections with their debilitating sequelæ are prevented by the proper inspection of meat, and this simple safeguard is a potent factor in the preservation of human health.

References of a similar nature could be multiplied, but the main point which I wish to impress is, that we are dependant upon one another for our very existence, and each must assume such responsibilities as may properly be allotted to him if the greatest good is to be accomplished. In the allocation of the responsibility, the trained veterinary hygienist must necessarily assume his share of the burden in the co-operative efforts to protect the human race from any condition which may exert an adverse influence. His special training is such that he can materially assist any public health effort in attaining its fullest fruition.

CHRONICLES "EN ROUTE"

MANILA—HONG-KONG—CANTON—SHANGHAI

By FLORENCE WITHROW, B.A.

IN the five days' voyage from Nagasaki to Manila perceptibly warmer weather was perceived unmistakenly. It was a case of wilt, wilter, wiltest. The full day's sail off Formosa, was positively "drenching," so intense was the heat and so great the humidity. Bathing suits were the proper attire. It was not reassuring to know that each turn of the screw brought us nearer the equator. Manila is 15° north, but as the sun had crossed the line, and was almost vertical above our heads, causing the commencement of the hot season, 15° north is quite as good as the equator for sundry reasons. We could hardly have been hotter on the equator—or in Hades. The thermometer registered 98° in the shade. The heat of the tropics is no "solar myth."

AN ORIENTAL WELCOME

The American Government, we consider, deserves immense credit for ever staying in the torrid zone. What they have accomplished since that May morning, 1898, when Admiral Dewey entered Manila Bay and bombarded the old Spanish city, no one can know who has not seen, before and since. Three whole months they spent cleaning up three hundred years of filth in the walled city alone. Now this section is a model of cleanliness with proper sewage and street cleaning system. The surrounding native Filipino villages were squalid in the extreme, with even the grown ups going about in "naked attire." Now all are clothed save the little tots, even though the dress of some resembles Gunga Din's. The police surveillance in town and village is excellent. A feeling of public safety prevails, except amongst the remote wild tribes of Igorots, Legritos and Moros.

The prison system is most commendable, conducted on strictly modern and corrective lines. A sad, though interesting

sight, we witnessed in the old Spanish prison at 5 o'clock, the hour of retreat. Two thousand seven hundred men in double rows, were lined up to march to their cells. Each carried a tin plate and in single file received his portion of supper.

Our hearts were touched, yet we were glad to know such discipline is maintained and such reformatory methods employed. An excellent gymnastic drill preceded the march. A more perfect exhibition of regularity we have never seen. Playing patriotic airs was a prisoners' band. With the first notes of the Star Spangled Banner every cap was doffed. Our eyes filled at sight of this alien dark-skinned race bowing in submission to the conquering nation's anthem. We wondered if we should like to do the same. Patriotism and allegiance cannot so easily be exchanged. Spanish blood flows in the veins of these Filipinos. For over 300 years Spain ruled. However, we banished sentiment and realized how infinitely better off these tropical people are under the sound government and energizing influence of the United States. These poor prisoners are good citizens in the making. Among them are fifteen hundred imprisoned for sedition for a term of fifteen years. The prison system aims to help them to forget they are criminals or rebels and to realize that they are subjects of a noble republic.

The dress of the men is now European and frequently white. That of the women is still native and unchanged and plainly shows Spanish influence. The cotton skirts are long with sweeping Spanish flounce. The waist is practically a chemisette, over which is worn a curious gauze jacket with enormous sleeves, showing prettily the bare arm. Over the low neck is the most astonishing kerchief in many folds. Like Queen Elizabeth's ruffs it could fairly stand alone. With the poorer classes this airy garment is of stuff which precisely resembles peach basket net, only it is stiff as buchram, being made of pino fibre. With the rich ladies it is of beautiful gauzy but stiff material elaborately embroidered or hand painted. In all, this dress is well adapted to the hot climate, having plenty of air holes and fitting loosely. Very dainty and butterfly looking are the Filipino ladies in this picturesque summer attire. Oftentimes the colors are soft, with several contrasting shades combined. The women are petite and with the long flowing skirt held up most prettily their appearance is exceedingly dainty and lady-like. This is true also of the poorer class.

As to native villages, they are best described as a group of bamboo shacks with walls of matting and roofs of thatch. All are on "stilts" 5 or 6 feet above ground. This is for two reasons, first on account of floods caused by rains or tornadoes, and second, as shelter for pigs and chickens, which are a part of every household. The carter and the farmer have underneath their shacks a large grey skinned almost hairless animal with a body like an ox, but with a head resembling a rhinoceros. This is the native beast of burden, called the caraboa. It is capable of drawing two tons, but is intolerably slow in locomotion. A curious sight is this big lumbering animal driven by a small lithe Filipino with an immense pointed straw hat.

The most interesting feature of Manila to us personally was the old walled city. Here are the great bastions, ornamental gates and massive walls built by the Spanish conquerors 300 years ago. Within and without was a large moat. This is now a sunken garden around the Muraha. Two and one-half miles is the entire circuit of the walls, yet within was once a population of a quarter of a million. The old Spanish churches are still in excellent condition and are the cleanest foreign Roman Catholic churches we know. They contain many beautiful architectural features and possess some art treasures. The wood carving is superb. Some of the altar paintings are by celebrated Spanish artists and are accounted masterpieces. If Spain did nothing more she surely builded well in churches and cathedrals. In their palmy days the Spaniards were great builders and not only in these tropical isles but throughout their possessions along the Spanish main and in South America wonderful churches, fortresses and walls attest their pristine power.

In justice to the United States we must say she also is building well. The governmental, military and educational buildings astonish me. The hospital is very large and claims to be the best equipped west of Chicago. The Manila Hotel is the finest in the tropics and is the social

centre of the city. It was interesting to watch the arrival for dinner of the smart American military set in elegant broughams or calesos, with dashing ponies, driven by spick and span coachmen in all white livery. Footmen accompanied many of the turnouts. Driving on the Luneta, at the Band hour, is the chief diversion of Manila fashionables. American officers are ever so grand in elaborate white and gold uniforms and seem to act with the full purpose of awing the native and of impressing the tourist. Trouble is anticipated among the Filipinos themselves as there are now three political parties each seeking control in the government and some anxious for independence.

The Philippine possession is said to be self-supporting, save for the expense of the army, which is exceedingly heavy, since, apart from salary, such unheard of perquisites accompany many appointments. The U. S. Government has spent $5,000,000 on the harbor alone, dredging out and filling in land a quarter mile deep in frontage and building cement wharves at which the largest ocean liners can dock. Manila Bay is a splendid land-locked harbor one hundred miles in shore line. At the entrance is Corregidor, the so-called Gibraltar, a strongly fortified point. More than seventy-five per cent. of the tonnage in foreign trade entering this harbor is under the British flag. As we learn the facts of merchant and naval tonnage in all these foreign ports we find that the Union Jack leads—Brittania still rules the waves.

Hong-Kong.

Forty-eight hours' sail from Manila brought us to Hong Kong, situated on the Tropic of Cancer. This stronghold was acquired by the English in 1842 as a concession after the opium war. England has also a perpetual lease of one hundred miles back from the coast of China for a distance of fifty miles. Being true British subjects, we were thrilled at setting foot on English soil. Striking are the evidences of British occupation. English officers, Tommy Atkins in red or khaki and East India Sikhs are constantly seen. The latter, who are also police, are handsome Hindoos with bombastic turbans and voluminous baggy white trousers, skin tight from knee to ankle. Their glossy, frizzy beards excited our curiosity, for they were ingeniously folded in under a narrow elastic which stretched from the top of the head to the chin. This practically doubled the beard and made it look like a nice fake one such as youths "tie on" for theatricals.

Victoria, the proper name for the city itself, is magnificently built of stone and granite. The business blocks surpass in magnitude and height almost anything in London. All have lofty arcades 15 to 20 feet high, arcaded also in the upper stories. The Government buildings and public squares are worthy of a great empire. A bronze canopied figure of Queen Victoria stands opposite the large granite Court House and surrounding it, in a spacious square, are life-size bronze statues of King Edward and Queen Alexandra, King George and Queen Mary. We know of nothing so handsome of its kind, save the City Hall Square of Belfast.

The feature par excellence of the island of Hong Kong is its lofty hills. No city in the world possesses such a terraced back ground. Genoa, called La Superba, has encircling hills but they lack the grandeur of Hong Kong. The panoramic view from the Peak 2,000 feet above the harbor is indescribable. The Chicago member of our party was even ready to admit they had nothing like it in Chicago. The view extends over the entire ten miles of the island and beyond to many islands, while "outer China 'erost the Bay" rises a splendid chain of mountains.

Some of us chose to walk down from the peak in order to gain a closer view of the governor's summer residence, a regal mansion, at least 1,800 feet in air, and of the many stately homes of wealthy Europeans. A vast soldiers' barracks also crowns the summit. The narrow harbor lay below studded with ships of all nations. Half way down the mountain is the Botanical gardens set with many rare plants and trees. We were glad to rest here, for our muscles were already aching. Nor did that ache—those aches—compound aches—depart for many days after.

Of course there is a large China town in Hong Kong, but, relatively speaking, being clean, we shall not comment upon it. Rather, let us spare the reader and save our remarks on Chinese life for the two million heathen Chinee of Canton. He assuredly is "peculiar." The eighty-mile journey up the Pearl or Canton River is made in surprisingly fine British-built steamships. The captain, a genial Scotchman, struck terror to our hearts with accounts of piratical "hold ups" of river steamers. We thought the days of pirates were passed, but were amazed to learn that only the week before a band of Chinese desperadoes, who had bought tickets and come aboard like decent passengers, took possession of the wheel and engine and ran a ship ashore far out of her course, after holding up every passenger. We were glad to learn that the British line take special precautions against these free-booters. They are required to carry four regular soldiers, the ship's officers must be armed and strong iron grills must protect the wheel and the engine rooms. By strict regulations these are kept closed while the steamer is in progress. Were it not for these precautions we readily see how "slick" and easy piracy could be even in these latter days.

Canton.

Canton, with a population of two millions, of which one-quarter million is literally a "floating population," living in river boats, is the most representative city of Southern China. This densely crowded place is a hive of industry, being the greatest manufacturing centre in all Cathay, yet, as it were, without a factory. In the Far East articles are still hand made and many storied factory buildings with machinery are practically unknown. Instead, each man works at his craft in some badly lighted recessed arcade or alley open to the passer-by. Hence the unique interest of Canton. In each street some different product is made—pottery, china, wood carving, ivory, feather work, embroidery, jade jewellery, paper goods and a score of other things. But the chief industry is silk weaving. One wonders how such exquisite fabrics can come from such dingy quarters. We minced our way through foul streets, reeking with filth and running with rivulets of colored dyes, also with no sewage, save a clogged-up passage beneath the irregular flag stone pavement. One could easily imagine a slaughter of the innocents so much gory looking red dye ran free in the streets.

The only way for a sensitive foreigner to "do" these streets is in a Sudan chair borne by three or four coolies, poor, sweaty, half clad fellows. The activity in the narrow thoroughfares is bewildering. There is hardly a street in Canton more than 8 feet wide, many are only four to six. Some few are quite gorgeous, the shops having gilded wood carvings and mirrors and an elegant stair case in the centre.

It is said there is not a horse in Canton. Absolutely everything is carried, not on the human back, but on a balanced pole. One begins to think the bamboo tree has served humanity better than Minerva's olive, for with stout poles, ropes and stalwart coolies, twenty or thirty if necessary to a load, even iron safes are borne through the narrow alleys. To us it is incomprehensive how a city can be built and houses furnished with no power but human brawn, and that brawn produced from hardly anything but rice, for meat is little used. To thousands it is too dear. The butcher shops are the most repulsive we have seen in any land, exhibiting what appears to the non-anotomical eye all the "in'ards" of the slaughtered beast. Formerly cats and rats were for sale, but are now forbidden. However, they are yet eaten. We watched the women marketing. They handle everything, tear off what they want and buy an ounce or so. Their small purchase of meat, fish or green stuff is tied with a bit of straw and is carried in dangling fashion.

One sniff at a Chinese restaurant—the chop suey—is as much as Anglo-Saxon nostrils can stand. As Kipling's elephant says: "The Chinee is a little too butch for be." Of course, rice, raw fish and stews are eaten with chop sticks and what cannot be devoured thus is poured down from a bowl. Table manners are not among the arts of the Celestial Empire, or Republic must we say. It is hard to realize that the old order has passed away. Our

papers are full of the grave unrest now existing, but changes so radical cannot come without serious conditions arising.

One striking evidence of old customs was the frequent sight of stunted feet of many women. They wear a tiny pointed shoe, often not more than three inches long. Some feet are monstrosities with thick and distorted ankles, which have to be bound in cloth or rags. Occasionally to hide these a double frill is worn. Above the "high water" trousers worn by all Chinese women, these frills have a ludicrous appearance to occidental eyes. Of all strange and cruel practices, dictated by fashion, foot-binding surely was the worst. During babyhood the child suffered excruciating pain and we cannot but fear there are still aching ankles in bad weather, such as a sprained foot feels. The whilom hobble skirt belongs naturally to the same barbarity as the bound foot, for slow hobbling on tip-toe supported by a stick on the arm of a friend is the only possible locomotion for these poor "soleless" creatures.

Enquiry into industrial conditions showed us that a serious crisis is pending. The adoption of European dress is lessening the demand for home-made fabrics. The rich brocades and embroideries are ceasing to be worn by mandarins and persons of wealth. Native fantastic jewellery and feather and ivory gew-gaws are being less used, Chinese cooking and household utensils are being replaced by European wares. The need of home products is enormously decreasing. What the future holds industrially for China's four hundred millions (largest population of any country) is hard to predict.

Of course with more highly civilized tastes, life will become more complex and greater industry will be required to supply more varied wants, still, if modern machinery follows European adoption, less hand labor will be needed. Already millions are unemployed. One's heart pities these far off nations that know idleness so appalling.

We feel the only solution of the terrible economic problems in the Far East is a blending of the best of Eastern and Western civilization, accompanied by Christianity. Non-Christian nations have not learned sanitation or cleanliness. Let the non-supporter of Christian missions travel in any Oriental land and he will notice vast differences, materially and morally. Christian cities have slums and degrading life, but not one will say these are the result of Christianity, which is a religion pure and undefiled. But, alas! heathen religions, although holding much that is pure and ennobling, also have revolting and cruel practices and vices unthinkable, done actually in the name of religion. The British Government in India has had to forbid certain sects in Hindoism, celebrating their frightful orgies. No one can mention an existent religion that honors women so highly as does Christianity. Let not the person who is indifferent be deceived by the pagan philosophies. Sir Edwin Arnold, Lady Gordon and others have been fascinated by the glamour and by the ethics of these, but have they really known Christianity spiritually, that they should expose a heathen faith?

If we expressed sentiments of slight prejudice against Canton's uncleanliness, we may almost declare that Macao is the acme of cleanliness. It was the earliest foreign settlement in the East four centuries ago and was founded by the Portuguese. Its beautiful gardens and parks are redolent with the perfume of sumptuous days. In mountain background, in contour of coast, Macao bears striking resemblance to the French Riviera. Its Prada Grande is quite as lovely in natural beauty as the celebrated Promanade des Anglais at Nice. Many of its ocean villas are also as fine.

This city is an amazement to the tourist. Impossible is it to realize that it is in China until one enters the Chinese quarter. The Public Works Department keeps up the town as a show place to attract visitors for the gambling. The houses are beautifully fresh with tinted kalsomine. There is scarcely an exception in the entire Portuguese section. Such lovely colors and combinations we have never seen surpassed even in the beauty resorts of France and Italy. We doubt if there is any place in Portugal so brand new looking. The streets are swept until not a leaf remains. The old Governor's residence was built as a palace and many costly mansions line the ocean Prada. Several fine churches with splendid fa-

cades attest bygone opulence. Regal was the splendor of the wealthy settlement. Alas! one reason for this was the cruel slave trade, which yielded a large revenue The Chinese were torn from their families and shipped to Chili to work the mines. Thus this Portuguese colony became rich until the slave trade was prohibited by England.

Macao is famed for gambling and is the Monte Carlo of the East. There are sixty-four licensed gaming houses, miserable places, although bearing the delusive gilded sign "First-class." They are sub-let to Chinamen and are mostly patronized by the Chinese who have a natural weakness for this pernicious pastime.

Macao's China town exhibits the influence of foreign cleanliness and in contrast with Canton is immaculate. In one of the old Buddhist temples we witnessed a curious sight. Several poor families brought offerings of a boiled shank, a half dozen oranges, some puny bananas and a dozen or more cups of tea. After remaining on the altar for a time these were taken home and eaten. It was the month of ancestor worship and food is a special tribute to the dead.

Another strange sight was that of a young girl kneeling before the Buddha rattling a bamboo jar of joss-sticks. As one or two fell out, she took them to the priest, who noted their number, then turning to a board covered with slips, gave her the corresponding paper. As the answer did not suit, she shook the sticks again. Poor heathen soul, striving in darkness to know her god. May Almighty God open the blinded eyes of the vast pagan world.

On another occasion we saw strange ancestor worship in the cemeteries. Red and yellow papers were attached to every grave, lighted tapers were smoking before each shrine. We met hundreds returning from their ancestral rites. Our visit was too late to see the worshippers actually at the graves, but many evidences of devoted reverence were visible. We felt strangely awed and almost superstitious. In these deserted burial grounds, might not the spirits still be hovering!

From Hong Kong to Shanghai is a two and one-half days' sail and sixty miles up the Yangtse-Kiang our good ship anchored. Then a large tender carried us twelve miles up the Whampoo River to the greatest commercial centre of the Celestial Empire. Here are combined five settlements, the British, the French, the American, the German and the ancient Chinese.

Shanghai.

Shanghai means "on the sea." It is said to date back to 304 B.C. The old walled city is most interesting and the "curiousest" place imaginable. The streets are narrow, the bazaars low and small. Bright colored scrolls decorate each shop. The general appearance is that of a fair. Throngs crowd around the visitors and both natives and foreigners stare genially at each other. The old willow tea house 600 years old is wonderfully quaint and picturesque. It stands in a pool and is reached by a zigzag bridge. This fantastic wooden building, with turned up roof corners, is said to be the original of the tea house on the now rare "willow pattern" china. Next we visited a high Mandarin's Court and sat in the capacious carved chair.

The best silk shops, although belonging to Chinese merchants, are in the British concession. One is readily entertained watching buyer and seller. The shop furnishing is supposedly European, but is really an incongruous adaptation. The counter is uncomfortably high and forms a hollow square. Inside the clerks fall over one another so numerous are they. They lean half way over the top as if ready to seize each customer. Low tables and cushioned chairs are provided the tea drinkers, dingy urns and stained teapots standing near the entrance. Two small attendants supply the purchasers with a sickly green beverage. This gives quite the air of a reception. The salesmen are dressed in short wadded jackets of grand brocade. Under this is a preposterous skirted garment of silk. The upper class may be said to always dress in silks and satins for comparatively few have adopted the European dress. A rich old Mandarin with long scanty beard and brocaded in gorgeous royal blue from head to foot saluted us genially. The ladies also wear the heavy brocades. Some even have the trousers, which are universally worn

by Chinese women of this same ponderous fabric.

A visit to the Jesuit College was well worth while. A curious sight through the country was the numerous mounds in the fields which we discovered were graves. The Jesuits have a large industrial school and farm and are imparting a splendid education. The girls' department was scrupulously clean and their needle-work exquisite.

Shanghai has one feature which puts Toronto to shame. Its bund or river front has a metropolitan driveway over a mile in length. Along this runs a double car track. A small and well kept park stretches at one end, while several stately monuments front the water. An attractive ferry landing has on either side a broad boulevard of grass and flower beds. Among the buildings facing the river are several which surpass in architecture any business structures in Toronto. One is in heavy German mediaeval style with splendid slanting roof. We wish our own good city had more business blocks with picturesque sky lines instead of with such monotony of flat roofs.

Shanghai harbor was a picture scene, with a dozen war-ships of different nations lying at anchor. All were painted white with red funnels. Large three deck river steamers were also dazzling white. With various flags flying it was a gala sight. Immense steel and iron works front the water, also huge Standard Oil warehouses. The Chinese Government has given to this great monopoly large concessions far in the interior. The Standard Oil and Singer's sewing machine greet the tourist the whole world round.

On sailing down the Yangtze we experienced a wild typhoon. Hail and fork lightning were in lively action—a striking sight, but fortunately not a "killing" one. We did not venture into the Yellow Sea until dawn. Yellow is no misnomer. for this water can boast more unstrained mud than even the Mersey or the Yellow Tiber. A thirty-six hours' sail brought us back to quaint Japan.

We wonder if that day will ever dawn when we shall be free from the faddist.

Faddism.

One of the most glaring evidences of his presence amongst us, was found in a report of an address given by one of our dental friends to a company of teachers. The dentist told the teachers that porridge was not a good food because the eating of it did not exercise the teeth sufficiently. What a shattering of settled convictions is this! We have looked to Scotland as the nurturing ground of a superior race and to porridge as their staple diet. We have heard how Scottish students startled the world with their brain prowess; we have always understood that porridge did it. Surely, we shall not have to forego the facts of centuries because a dental surgeon propounds such a preposterous proposition. No, we shall not do so. We are, indeed, sorry that in this age of specialism certain members of all trades and professions get such a close and narrow view of some one idea that all else is excluded. Porridge is not a good food because it doesn't exercise the teeth! Gad-zooks!

Without a doubt the object lessons which we are presenting under the general caption of "Ethics" appear to be stirring up a great amount of comment. One of our readers told us that he has taken to the study of the advertising pages in his religious weekly as never before. He finds a vast amount of improvement necessary. Another subscriber writes us in reference to his particular religious weekly and deplores the fact that the attention of the authorities of his church has been called again and again to the placing of fake advertising, with no result. We believe that it is a shame for the religious press to lend itself to such perfidy. If the religious press wants its sermons to enter responsive hearts, it will have to cleanse itself. No preacher can do effective work for humanity unless he is clean every whit. We have no quarrel with the Canadian religious press. It is manned by capable men and presents weekly and monthly very creditable periodicals. But we insist that the religious press is doing great harm in flaunting fake advertisements before its religious readers. We shall continue to show the public what this evil looks like until it shall have been done away.

The Religious Press.

We have opened up a new department in our Journal, one which we are sure will prove interesting and instructive. This Journal is a champion of pure food and will not rest satisfied until the best Pure Food Law that can be drafted is placed upon our Canadian Statute Books. We have, however, a number of well-known manufacturers who are placing on the market the best and purest product, they know how to produce regardless of any coercive law. These factories we are proposing to visit and we shall tell our readers the story of the hours spent there. The first appears in this issue and relates to a firm of undoubted worth. Let us buy food which is scientifically and conscientiously manufactured. Let us work for the day when every maker of foodstuffs will be obliged to conform to a standard. Our neighbors to the south have done grand work along pure food lines. We are far in the rear.

Pure Food.

Ad. Frauds.

If an evil is allowed to grow until it has attained the stature of a giant, there will arise sooner or later some Jack-the-Giant-Killer, who will put his axe at the root of the matter. We call attention here to the weapon which our Federal House has prepared:

> Ottawa, May 5.—Hon. C. J. Doherty, Minister of Justice, has given notice of an Act to amend the Criminal Code. The purpose of it is to make those who knowingly publish or cause to be published, false and fraudulent advertising, criminally responsible.

We do not believe that the Minister has gone far enough in his Bill, but we are gratified to know that a start has been made and we are confident that the day will come when our press, daily, weekly, and monthly, shall be free from objectionable and damnable features.

Ontario Health Officers.

This splendid body of men gathered in force during the month of May to discuss their problems. On another page will be found a report of their proceedings. We call attention to two things which need remedy. First of all we feel that more real good would be accomplished if some of the time were spent in group discussions. For example, the men who are working in the cities have the same problems; they ought to discuss their common interests. The M.O.H.'s of the smaller towns have their distinctive problems; they would find it very advantageous to meet together. The village and township men would enjoy a discussion of their special problems. We hope that at next year's meeting some of the addresses may give place to just such practical work. Then there is the question of the remuneration of the M. O. H. We heard one man say he received the splendid salary of ten dollars per year. Another replied that his stipend was the same sum. Shame! The idea was expressed by many that if the M. O. H. shows his community that he is doing good work and is therefore worthy of a good salary he will receive it. Is that the right principle to work on? The new Health Act now removes the position of the M. O. H. of any municipality from the whim or caprice of any individual counsellor or alderman. He can be removed only with the consent of the Provincial Board of Health. Why not then let the Provincial Board prepare a schedule of minimum salaries and then see to it that men appointed do their full duty. That is what will eventually be done. Why not now?

Learn to Swim.

How many tragedies will it take to impress upon our people that every boy and girl, man and woman, should learn to swim? That great disaster in the St. Lawrence, which ploughed so deep a furrow in our Canadian life, teaches us that with but two exceptions, those who survived were those who swam. The others sank like lead. Lack of confidence begat fear and fear acted as a sinker. Canada is filled with great lakes and rivers. The Canadian youth should know how to swim. We remember very well how, as a small boy, our timidity kept us for long months from venturing beyond our depth. We recall how one day a great fellow, with kindness of heart (oh, how cruel it seemed then) took us on his shoulder away out into the deep, threw us over into the water, and said, "Now, sink or swim." We swam, at least in a kind of way, and our confidence was aroused. Once, since then, we have been able to save ourself from a watery grave. Referring again to the great Empress disaster, we are well aware that hundreds were unable to do anything to help themselves. They died imprisoned. But we are certain that many more could have been rescued if they had learned the art of swimming. It is a graceful art and healthful.

Criticism.

In "Letters to the Editor," we print one communication from a Western reader, giving us our first word of criticism for a year at least. We shall answer his criticism in these pages in a future issue. In the meantime write us *your* views.

The Great Consulting Room of a Wise Man is a Library—Dawson.

Conducted by

O. C. Jay.

THE SPECTROSCOPE.

HOW little we use the spectroscope in medicine! Yet like the lancet and the stethoscope it has its triumphs, and it has recently brought great credit to the clinical laboratory by showing how to prevent blackwater fever that scourge of tropical outposts which we could neither prevent nor cure. That disease began to be heard of some 25 years ago, and its cause and its nature were always being discussed. Was it, as some said, purely malaria acting on a constitution so broken down by long exposure that not even quinine could support it, or was it, as others said, in truth a quinine poisoning. Nobody knew for certain, but every one was anxious, for it specially attacked the isolated European at some unhealthy outpost where there was no doctor, and recovery anyway was so rare.

Dr. N. Sorensen, a Dutchman, practising in Flores, a beautiful island between Australia and Singapore, read in the British Medical Journal that Dr. A. Plehn had found urobilin in the urine of all cases of malarial fever, and he got a spectroscope to observe this, as he was practising in a very malarious district. Urobilin appears in the urine when hæmoglobin or red corpuscles are being destroyed, and it gives the urine no characteristic appearance, but such urine examined by the spectroscope shows a dark absorption band in the blue and indigo region of the spectrum. Dr. Sorensen measured the amount of urobilin in each urine by the dilution he could make without losing the reaction, and his usual figures were between 2 and 12 for whatever sort of malarial fever, and the urobilin disappeared in two to four days after temperature had become normal; sometimes it returned again two or three days before a relapse, but not in every case, and the stronger the reaction for any patient, the more severe was the fever and the more delayed was convalescence. One day there came a patient with an astonishing urobilin figure, 125. He had been treated two days as an out-patient for fever, and had each day got 15 grs. of quinine. He was carefully examined and found to have slight jaundice and much albuminuria. On careful consideration it appeared obvious that some great breaking down of red corpuscles was going on, that made it seem likely that a case of blackwater fever was developing, the patient was brought into the hospital against his will, got no more quinine, and was kept in bed. He did develop a slight blackwater fever attack during the night; it cleared up in 40 hours, though urobilin persisted in quantity for a week; the patient recovered and after being in the hospital ten days asked for his discharge as he wished to get married. There were fifteen other cases in Dr. Sorensen's report. He has had no serious case of blackwater fever since he got his spectroscope, but three days before it arrived a patient took ill of it, got 15 grs. of quinine and died at 5 p.m., and there were many others in that bad that early time. So Dr. Sorensen has shown us by his spectroscope that blackwater fever is something of an anaphylaxis. The patient weakened by malaria and made over-sensitive by being constantly dosed with quinine, at last loses his balance, and taking another attack for which he is given more quinine than he can stand, falls down into the hæmoglobinuria of blackwater fever. It

will be noticed that the result obtained is the outcome of quantitative chemical methods. It was not enough that the mere presence of urobilin should be stated. It was the amount of urobilin found that arrested the attention and gave Dr. Sorensen opportunity to show us how to prevent this blackwater fever. We have, it is true, no blackwater fever in Canada, but the moral for us, as for the others is, nevertheless, the same—Exactitude in clinical work.

DR. N. SORENSEN, ARCHIV FUR SCHIFFS UND TROPEN-HYGIENE, March, 1914.

W. E. HOME, M.D.

STUDIES IN WATER SUPPLY.

STUDIES in Water Supply is the title of a splendid monograph recently published and coming from the pen of Dr. A. C. Houston, the celebrated British authority on water supplies, it should prove of considerable interest to waterworks engineers and sanitarians generally. Whilst largely dealing with the London water supply, much space is devoted to the study of modern methods used in purification processes. The question of abstraction and supplementary processes of purification and sterilization are dealt with in the early chapters. Under sterilization the "excess lime" method which was tried out by Dr. Houston on an experimental stage in London, and subsequently adopted by the City of Aberdeen, Scotland, is described at length. A chapter is devoted to storage in relation to purification by natural sedimentation and devitalization, and many interesting figures are given showing the excellent results that have been obtained. According to Dr. Houston's experiments, one week's storage would result in a larger percentage reduction in the initial numbers of typhoid bacilli, than could ever be obtained by the use of sand filters alone, under the usual practical conditions of working. The description and results of experiments on the vitality of the typhoid bacillus is very conclusive and gratifying. To prove the results of storage, and with the object of demonstrating at least to his own satisfaction, that his faith was equal to his experimental knowledge, Dr. Houston drank without ill effects, half a pint of water initially infected with myriads of typhoid bacilli at the end of the 24, 25, 26, 27 and 28th days' storage. In these experiments, the initial number of typhoid bacilli per half pint was computed at 218,680,000. In this case 770,000 typhoid bacilli per c.c. of the infected water became reduced to only four within one week and yielded negative results in 100cc. at the end of fourteen days. Similar experiments were made using a laboratory culture, but markedly different results were obtained. In its "cultivated" state the bacillus was found indeed, to survive for five weeks in river water, under otherwise comparable conditions of experiment. Inasmuch as the risk of acquiring typhoid from drinking of polluted water is mainly due to the possible presence of "uncultivated" typhoid bacilli, these observations would seem to be of far reaching importance. A very interesting chapter is devoted to the study of water borne disease, and the question as to whether the decline in typhoid fever has always resulted following the improvement of a water supply, or whether the improvements in sanitary matters generally which so frequently is conjoined with an enlightened policy as regards water supply may not also be a factor in the situation. The current desire to "cut the typhoid fever death rate in two" should not lead waterworks authorities to assume without sufficient warrant that the danger of epidemics has been wholly removed by improved processes of purification, or to forget the vital distinction between specific and non-specific pollution, and the enormous importance of guarding against the possibility of accident. The routine bacteriological methods for examining water are most exhaustively given and a special chapter is devoted to the isolation of pathogenic organisms associated with water borne disease. Under the heading of miscellaneous information is given a series of tables extremely useful for reference purposes. The book is well printed and contains many excellent charts and diagrams.

STUDIES IN WATER SUPPLY, by A. C. Houston, D.Sc., M.B., C.M. Macmillan & Co., London and New York. Price $1.25. N. J. HOWARD.

Physical Training.

Athletics has been responsible for a great deal of harm to the youth of the land. One authority is responsible for the statement that at a Western University over 60 per cent. of the boys "in training" had cardiac murmurs. It is common knowledge that an alarmingly large proportion of the men who participate in the great University rowing contests pass out of this world by the heart disease route. Physical exercise is as necessary to the human frame as the food we eat or the air we breathe. But it must be sane and useful. These two volumes, which have come to hand, purport to give us physical training in its very best application. The chapter on athletic sports is especially important. It is based upon the principle of what may be termed co-operative athletics, the object of which is to distribute the benefits of exercise among as large a number as possible, and develop a good average degree of skill among all who take part in them, as opposed to the championship system which tends to develop a high degree of skill in a few who represent the rest in competition. The latter system has its drawbacks. It breds professionalism in sport and induces numbers of persons interested in games to sit and watch a few experts play them instead of playing themselves. It also involves serious dangers due to overstrain, the consequences of which may be grave in the case of children, girls and youths. Throughout these books the dangers of overstrain in physical training and in taking exercise are clearly indicated and guarded against as far as possible. That is the central idea of the books. It is carried out faithfully and well. The illustrations are excellent. The books are very much worth while.

PHYSICAL TRAINING (Junior Course)—Swedish exercises, athletic sports, swimming, diving, life saving.

PHYSICAL TRAINING (Senior Course)—Swedish exercises, athletic sports, swimming, diving, life saving. By E. John Solano, author of the "World's Armies," in the Encyclopædia Brittanica Year Book, 1913, Inventor of the Solano Target, etc.—The Bobbs-Merrill Company, Publishers, Indianapolis. Price, 75c. net, each.

Books Received.

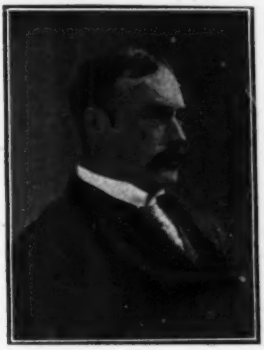
The following books have been received, and the courtesy of the publishers in sending them is hereby acknowledged. Reviews will be made of these volumes from time to time.

MENTAL DEFICIENCY (AMENTIA)—By A. F. Tredgold, L.R.C.P., Lond. M.R.C.S., Eng., Consulting Physician to the National Association for the Feeble-Minded and to the Littleton Home for Defective Children; Lecturer at the Medical Graduates College, London; formerly Medical Expert to the Royal Commission on the Feeble Minded; Research Scholar in Insanity and Neuropathology of the London County Council and assistant in the Claybury Pathological Laboratory; late Resident Clinical Assistant in the Northumberland County Asylum, etc. Second edition. Revised and enlarged—Illustrated—Toronto—The MacMillan Company of Canada, Limited, 1914.

RESEARCHES INTO INDUCED CELL-REPRODUCTION IN AMOEBAE—By John Westray Cropper, M.B., M.Sc., Liverpool, M.R.C.S., Eng., L.R.C.P., Lond., and Aubrey Howard Drew—With illustrations—The John Howard Researches—Vol. IV—London, John Murray, Albermarle Street W, April, 1914—Price 5 shillings net.

THE HYPODERMIC SYRINGE—By George L. Servoss, M.D., Editor Nevada Medicine; Member of the Nevada State Medical Association; Fellow of the American Medical Association—317 pages—Cloth—Price $2.00—Physicians' Drug News Co., Publishers, Newark, N.J.

CANADIAN POETS



WILLIAM HENRY DRUMMOND

[*In a recent estimate of his work, Katherine Hale, the Canadian critic, has said: "In the great family of modern poets, of which he is undoubtedly a member, Dr. Drummond takes the same place that would be accorded in the family of artists to the master of 'gendre': that is to say, he depicts with rare fidelity and affection a certain type, makes it completely his own and then presents us with the finished picture. The Habitant on his little farm, the voyageur on wild river ways and the couriers des bois are all immortalized in songs that for humor, pathos and picturesqueness it would be hard to excel. They are inherently native to the only section of Canada that can conscientiously be called 'quaint,' and will always remain among our valuable historic and human documents."*]

DR. WILLIAM HENRY DRUMMOND, the poet of the "Habitant," was born in the village of Mohill, County Leitrim, Ireland, on the 13th of April, 1854. Shortly after, his father, an officer in the Royal Irish Constabulary, moved to the village of Tawley, on the Bay of Donegal. It was in this village that the future poet's education began, under a worthy and capable schoolmaster, of whom in after years he spoke in terms of affectionate gratitude.

While he was still a boy, the family emigrated to Canada, where the father in a few months died, leaving but limited means for the support of wife and children.

William Henry soon found it necessary to leave school, to earn what he could to help provide for the family. Having learned telegraphy, he was employed at Borde à Plouffe, a small village on the Riviere des Prairies, near Montreal. It was here that he first observed the speech and the customs of the Habitant, whom,

with the kindliest intent, he has so faithfully portrayed.

In time, the family exchequer permitted him to attend the High School in Montreal, later McGill University, and finally, Bishop's College, where he graduated in medicine in 1884. Dr. Drummond practised his profession for four years in the district about Brome, and then returned to the City of Montreal, where he continued to reside until his lamented demise in 1907.

At forty years of age, Dr. Drummond married Miss May Harvey, of Savannah la Mar, Jamaica. In Mrs. Drummond's memoir of her distinguished husband, she relates that he read with many misgivings, one of his earliest poems, "Le Vieux Temps," at a dinner of the Shakespeare Club of Montreal. "This was the beginning," she says, "of a long series of triumphs of a like nature, triumphs which owed little to elocutionary art, much to the natural gift of a voice rare alike in strength, quality and variety of tone, but, most of all to the fact that the characters he delineated were not mere creations of a vivid imagination. They were portraits tenderly drawn by the master hand of a true artist, and one who knew and loved the originals."

"The Habitant and other French-Canadian Poems" was issued in 1898, by G. T. Putnam's Sons, of New York, after the author had deposited $2,000 in cash, as a guarantee to the publishers against loss. Fortunately, the popularity of the volume was such as to bring the poet fame, and a substantial income in royalties. It was followed by "Johnnie Courteau and other Poems" in 1901; by "Phil-o'-Rum's Canoe and Madeleine Vercheres" in 1903, and by "The Voyageur and other Poems" in 1905. Poems unpublished at the time of his death were edited and published with the afore-mentioned memoir, by his wife, in 1909.

Much of the last two years of his life, Dr. Drummond spent in the Cobalt district, where he had mining interests. There he was stricken with cerebral hemorrhage and died in the morning of April 6th, 1907. Probably no other Canadian poet has been so widely mourned.

THE LAST PORTAGE

I'm sleepin' las' night w'en I dream a dream,
An' a wonderful wan it seem—
For I'm off on de road I was never see,
Too long an' hard for a man lak me,
So ole he can only wait de call
Is sooner or later come to all.

De night is dark an' de portage dere
Got plaintee o' log lyin' ev'ryw'ere,
Black bush aroun' on de right an' lef',
A step from de road an' you los' you'se'f,
De moon an' de star above is gone,
But somet'ing tell me I mus' go on.

An' off in front of me as I go,
Who is dat leetle boy dancin' dere—
Can see hees w'ite dress an' curly hair,
An' almos' touch heem, so near to me—
In an' out dere among de tree?
An' den I'm hearin' a voice is say,
"Come along, fader, don't min' de way;
De boss on de camp he sen' for you,
So your leetle boy's goin' to tak you t'roo.
It's easy for me, for de road I know,
'Cos I travel it many long year ago."

An' oh! mon Dieu! w'en he turn hees head
I'm seein' de face of ma boy is dead—
Dead wit' de young blood in hees vein—
An' dere he's comin' wance more again
Wit' de curly hair an' dark blue eye,
So lak de blue of de summer sky.

An' now no more for de road I care,
An' slippery log lyin' ev'ryw'ere,
De swamp on de valley de mountain too,
But climb it jus' as I used to do—
Don't stop on de road for I need no res'
So long as I see de leetle w'ite dress.

An' I foller it on, an' wance in a w'ile
He turn again wit' de baby smile,
An' say, "Dear fader, I'm here, you see,
We're bote togedder, jus' you an' me—
Very dark to you, but to me it's light,
De road we travel so far to-night.

"De boss on de camp w'ere I alway stay
Since ever de tam I was go away,
He welcome de poores 'man dat call,
But love de leetle wan bes' of all;
So dat's de reason I spik for you
An' come to-night to bring you t'roo."

Lak de young Jesu' w'en He's here below,
De face of ma leetle son look jus' so—
Den off beyon' on de bush I see
De w'ite dress fadin' among de tree—
Was it a dream I dream las' night
Is goin' away on de mornin' light?

DE NICE LEETLE CANADIENNE

You can pass on de worl' w'ever you lak;
  Tak' de steamboat for go Angleterre!
Tak' car on de State, an' den you come back;
  An' go all de place, I don't care—
Ma frien', dat's a fack, I know you will say,
  W'en you come on dis contree again,
Dere's no girl can touch, w'at we see every day,
  De nice leetle Canadienne.

Don't matter how poor dat girl she may be,
  Her dress is so neat an' so clean,
Mos' ev'ry wan t'ink it was mak' on Paree,
  An' she wear it, wall jus' lak de queen.
Den come for fin' out she is mak' it herse'f,
  For she ain't got moche monee for spen',
But all de sam' tam, she was never get lef',
  Dat nice leetle Canadienne.

W'en "un vrai Canayen" is mak' it marié,
  You t'ink he go leev on beeg flat,
An' bodder hese'f all de tam night an' day
  Wit' housemaid, an' cook, an' all dat?
Not moche, ma dear frien', he tak' de maison,
  Cos' only nine dollar or ten,
W'ere he leev lak' blood rooster, an' save de l'argent,
  Wit' hees nice leetle Canadienne.

I marry ma femme w'en I jus' twenty year,
  An' now we got fine familee,
Dat skip roun' de place lak' leetle small deer,
  No smarter crowd you never see—
An' I t'ink as I watch dem all chasin' about,
  Four boy an' six girl, she mak' ten,
Dat's help mebbe kip it, de stock from run out
  Of de nice leetle Canadienne.

O she's quick, an' she's smart, an' got plaintee heart,
  If you know correc' way go about;
An' if you don' know, she soon tole you so,
  Den tak' de firs' chance an' get out;
But if she love you, I spik it for true,
  She will mak' it more beautiful den,
An' sun on de sky can't shine lak' de eye
  Of dat nice leetle Canadienne.

TH WRECK OF THE 'JULIE PLANTE'

(A Legend of Lac St. Pierre.)

On wan dark night on Lac St. Pierre,
  De win' she blow, blow, blow,
An' de crew of de wood-scow *Julie Plante*
  Got scar't an' run below—
For de win' she blow lik' hurricane,
  Bimeby she blow some more,
An' de scow bus' up on Lac St. Pierre
  Wan arpent from de shore.

De captinne walk on de front deck,
  An' walk de hin' deck too—
He call de crew from up de hole,
  He call de cook also.
De cook she's name was Rosie,
  She come from Montreal,
Was chambermaid on lumber-barge
  On de Grande Lachine Canal.

De win' she blow from nor'-eas'-wes',
  De sout' win' she blow too;
W'en Rosie cry, "Mon cher captinne,
  Mon cher, w'at I shall do?"
De captinne t'row de beeg ankerre,
  But still de scow she dreef;
De crew he can't pass on de shore
  Becos' he los' hees skeef.

De night was dark lak' wan black cat,
De wave run high' an fas',
W'en de captinne tak' de Rosie girl
An' tie her to de mas'.
Den he also tak' de life-preserve,
An' jump off on de lak',
An' say, "Good-bye, my Rosie dear,
I go drown for your sak'!"

Nex' mornin' very early
'Bout ha'f pas' two-t'ree-four—
De captinne—scow—an' de poor Rosie
Was corpses on de shore.
For de win' she blow lak' hurricane,
Bimeby she blow some more,
An' de scow bus' up on Lac St. Pierre
Wan arpent from de shore.

MORAL

Now all good wood-scow sailor-man,
Tak' warning by dat storm,
An' go an' marry some nice French girl
An' leev on wan beeg farm.
De win' can blow lak' hurricane,
An' s'pose she blow some more,
You can't get drown' on Lac St. Pierre
So long you stay on shore.

LITTLE BATEESE

You bad leetle boy, not moche you care
How busy you're kipin' your poor gran'-pere
Tryin' to stop you ev'ry day
Chasin' de hen aroun' de hay—
W'y don' you geev' dem a chance to lay?
Leetle Bateese!

Off on de fiel' you foller de plough
Den w'en you're tire you scare de cow
Lickin' de dog till dey jomp de wall
So de milk ain't good for not'ing at all—
An' you're only five an' a half dis fall.
Leetle Bateese!

Too sleepy for sayin' de prayer to-night?
Never min', I s'pose w'll be all right;
Say dem to-morrow—ah! dere he go!
Fas' asleep in a minute or so—
An' he'll stay lak dat till de rooster crow,
Leetle Bateese!

Den wake us up right away tout suite
Lookin' for somet'ing more to eat,
Makin' me t'ink of dem long leg crane
Soon as dey swaller, dey start again,
I wonder your stomach don't get no pain,
Leetle Bateese!

But see heem now lyin' dere in bed,
Look at de arm onderneat' hees head;
If he grow lak dat till he's twenty year
I'll bet he'll be stronger dan Louis Cyr,
An' beat all de voyageurs leevin' here,
Leetle Bateese!

Jus' feel de muscle along his back,
Won't geev heem much bodder for carry pack
On de long portage, any size canoe,
Dere's not many t'ing dat boy won't do,
For he's got double joint on hees body too,
Leetle Bateese!

But leetle Batesse! please don' forget
We rader you stayin' de small boy yet,
So chase de chicken an' mak' dem scare,
An' do w'at you lak wit' your old gran'-pere,
For w'en you're beeg feller he won't be dere—
Leetle Bateese!

JOHNNIE CORTEAU

Johnnie Corteau of de mountain,
Johnnie Corteau of de hill,
Dat was de boy can shoot de gun,
Dat was de boy can jomp an' run,
An' it's not very offen you ketch heem still,
Johnnie Corteau!

Ax dem along de reever,
Ax dem along de shore,
Who was the mos 'bes' fightin'-man
From Managance to Shaw-in-i-gan?
De place w'ere de great beeg rapide roar,
Johnnie Corteau!

Sam't'ing on ev'ry shaintee
Up on de Mekinac,
Who was de man can walk de log
W'en w'ole of de river she's black wit' fog
An' carry de beeges' load on hees back?
Johnnie Corteau!

On de rapid yo want to see heem
If de raf she's swingin' roun',
An' he's yellin', "Horraw, Bateese, good man!"
W'y de oar come double on hees han'
W'en he's makin' dat raf' go flyin' down,
Johnnie Corteau!

An' Tete de Bouli chief can tole you
De feller w'at save hees life
W'en big moose ketch heem up a tree
Who's shootin' dat moose on de head, sapree!
An' den run off wit' hees Injun wife?
Johnnie Corteau!

An' he only hav' pike pole wit' heem
On Lac a la Tortue
W'en he meet de bear comin' down de hill,
But de bear very soon is get hees fill!
An' he sole dat skin for ten dollar, too,
Johnnie Corteau!

Oh, he never was scare for not'ing
Lak' de old coureurs de bois,
But w'en he's gettin' hees winter pay
De bes' t'ing sure is kip out de way
For he's goin' right off on de Hip Horraw!
Johnnie Corteau!

Den pullin' hees sash aroun' heem
He dance on he's bottle sauvage
An' shout "all aboar' if you want to fight!"
Wall you never can see de finer sight
W'en he go lak dat on de w'ole village!
Johnnie Corteau!

But Johnnie Corteau get marry
On Philomene Beaurepaire,
She's nice leetle girl was run de school
On w'at you call parish of Sainte Ursule
An' he see her off on de pique-nique dere
Johnnie Corteau!

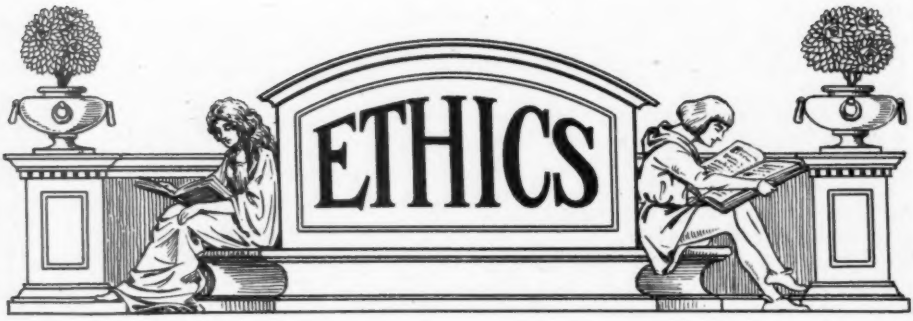
Den somet'ing come over Johnnie
W'en he marry on Philomene,
For he stay in de farm de w'ole year roun',
He chop de wood and' he plough de groun',
An' he's quieter feller was never seen.
Johnnie Corteau!

An' ev'ry wan feel astonish
From La Tuque to Shawinigan
W'en day hear de news was goin' around',
Along on de reever up an' down,
How wan leetle woman boss dat beeg man.
Johnnie Corteau!

He never come out on de evening
No matter de hard we try,
An' he stay on de kitchen an' sing hees song,
"A la clair fontaine,
M'en allant promener,
J'ai trouve l'eau si belle
Que je m'y suis baigner!
Lui y'a longtemps que je t'aime
Jamais je ne t'oublierai,"
Rockin' de cradle de w'ole night long
Till baby's asleep on de sweet bimeby.
Johnnie Corteau!

An' de house, wall! I wish you see it,
De place she's so nice an' clean,
Mus' wipe your foot on de outside door,
You're dead man sure if you spit on de floor,
An' he never say not'ing on Philomene.
Johnnie Corteau!

An' Philomene watch de monee
An' put it all safe away
On very good place; I dunno w'ere,
But anyhow nobody see it dere,
So she's buyin' new farm de nodder day.
Madame Corteau!



A STRIKING CONTRAST

We made a careful study of the May 7th issues of the Orange Sentinel and Catholic Register, culling from each its reprehensible quota. The results are apparent on these two pages. We congratulate the Catholic Register upon its freedom from fake advertising, for you can clearly see there is none within its columns; the two excerpts from its pages being the only ones which in any way approach such advertising. Let it be distinctly understood that there is as much advertising space sold in the one journal as in the other.

Our subscribers are respectfully requested to give our advertisers the benefit of their patronage. We accept advertisements from only such firms as we know are responsible, and worthy of the patronage of our people. Please favor them in every way possible. Our advertisers pledge themselves to give you honest treatment in all business relations.

Little Manitou Lake Home Health Treatment.

A Carlsbad in Your Home.

Let us tell you about the healing and curative qualities of these Mineralized crystals taken from Manitou Lake. If you are a sufferer from Rheumatism, Skin Diseases, Asthma, or Bronchial Troubles, *Write at once*, do not delay. Free yourself of all your ills *in your own home*. Send to-day for our Free Booklet. The L. L. Manitou Co., 240 1st ave., Watrous, Sask.

O'Keefe's

LIQUID EXTRACT OF MALT

WITH IRON

Is an ideal preparation for building up the **Blood** and **Body.** It is more readily assimilated and absorbed into the circulatory fluid than any other preparation of iron. It is of great value in all forms of Anemia and General Debility. For sale at Drug stores

W. LLOYD WOOD,

Toronto, Canada

GENERAL AGENT

From the "Catholic Register," Actual Size.

Free! Free to Ladies!

A Bottle of Blush of Roses

The regular price of the bottle of Blush of Roses I send free is 75c. In other words, it is a regular full-sized bottle, and that I give to any lady absolutely free. The most perfect face preparation and complexion beautifier. Whether face or neck as soiled, still be removed by the BLUSH OF ROSES in a few minutes. Where the skin is sallow, or the complexion has a yellow appearance, the BLUSH OF ROSES will positively remove tan, freckles, pimples, blackheads, liver-spots, sunburn, scratches, eruptions and other blemishes. Remember this, no matter how dark or sallow your complexion may be, you will see it improving day by day until a clear, smooth and beautiful complexion is obtained. Gentlemen who admire a lady's fine clear complexion are not averse to having the same themselves. And why should they hesitate to use the BLUSH OF ROSES? It is clear as water, takes the shine from the face, removes all impurities of the skin, and leaves no sign like powder or paste. The only clear, pure and harmless face preparation made. Cures Eczema and all skin diseases. Address: Mrs. Frances E. Curran, Windsor, Ont.

WRITE FOR FREE TRIAL OFFER.

BLUSH OF ROSES IS ALSO FOR SALE BY THE T. EATON CO. LTD. Toronto and Winnipeg.

SISTER: READ MY FREE OFFER.

I am a woman.
I have suffered untold agonies from female ailments for 15 years.
I have had years of doctoring and tried all the so-called "sure cures" for bearing-down pains, inflammation, ulceration, displacements, irregularities, suppressions, leucorrhœa, backache, nervousness, depressed spirits, melancholy, desire to cry, fear of something evil about to happen, creeping feeling up the spine, palpitation, hot flashes, weariness, sallow complexion, with dark circles under the eyes, pain in the left breast or a general feeling that life is not worth living. I invite you to send to-day for my complete ten days' treatment entirely free and prepaid. It is proved beyond a doubt that a woman can be easily and surely cured of all woman's ills at home, without the expense of hospital treatment, or the dangers of an operation. Women everywhere are escaping the surgeon's knife by knowing of my wonderful method of home treatment, and when you are cured, my sister, I shall only ask you to pass the good word along to your sisters who are suffering as you did. To those of you who are single and contemplate marriage I will explain a simple home treatment which speedily and effectually cures you of painful and irregular periods, bearing-down pains, nervousness, headache, backache, dizziness, displacement and bowels. Tell me if you are worried about your daughter. Remember it costs you nothing to give my method of home treatment a trial for ten days. Don't send a penny, don't promise, it costs only a few cents a week to do so, and I know you will be pleased with one week's work. Is health worth asking for? Then accept my generous offer, write me to-day, and I will send it to you in plain wrapper by return mail. Try the free trial you can, cut out this offer, mark the places that tell your feelings, and return to me. Write me to-day for the free treatment to-day, you may not see this offer again.

MRS. M. SUMMERS, Box 26 . . . WINDSOR, ONTARIO.

A SURE CURE FOR WOMEN'S DISORDERS

Ten Days' Treatment Free

ORANGE LILY is a certain cure for all disorders of women. It is applied locally and is absorbed into the suffering tissue. The dead waste matter in the congested region is expelled, giving immediate mental and physical relief; the blood vessels and nerves are toned and strengthened, and the circulation is rendered normal. As this treatment is based on strictly scientific principles, and acts on the actual location of the disease it cannot help but effect a cure of all forms of female troubles, including delayed and painful menstruation, leucorrhœa, falling of the womb, etc. Price, $1.00 per box, which is sufficient for one month's treatment. A Free Trial Treatment, enough for 10 days, worth 50c, will be sent Free to any suffering woman who will send me her address.

Confine I receive and address. MRS. FRANCES E. CURRAN, Windsor, Ont.

For sale by leading druggists everywhere

St. Jacobs Oil

Is the greatest remedy in the world for all bodily

Aches and Pains

for which an external remedy may be used.

Price, 25c and 50c.

WAKEFUL BABIES

If your baby does not sleep, if he is cross, cries a great deal and will not be comforted, that is the time to give him Baby's Own Tablets. They promote sleep—not the drugged unnatural kind obtained through the use of "soothing" mixtures, but that refreshing natural sleep of the healthy child. The Tablets banish all stomach and bowel complaints—the direct cause of crossness and sleeplessness. Concerning them Mrs. E. Medras, Grand Bois, Que., says: "When I began using Baby's Own Tablets baby was so troubled with constipation he would not sleep day or night. Now all this trouble has vanished and he is a strong healthy child." The Tablets are sold by medicine dealers or by mail at 25 cents a box from The Dr. Williams' Medicine Co., Brockville, Ont.

It is a Liver Pill.—Many of the ailments that man has to contend with have their origin in a disordered liver, which is a delicate organ, peculiarly susceptible to the disturbances that come from irregular habits or lack of care in eating and drinking. This accounts for the great many liver regulators now presented to the attention of sufferers. Of these there is none superior to Parmelee's Vegetable Pills. Their operation though gentle is effective, and the most delicate can use them.

Nothing so Good for Asthma. Asthma remedies come and go but every year the sales of the original Dr. J. D. Kellogg Asthma Remedy grow greater and greater. No further evidence could be asked of his remarkable merit. It relieves. It is always of the same unvarying quality which the sufferer from asthma learns to know. Do not suffer another attack, but get this splendid remedy to-day.

NEW HOPE FOR SUFFERERS FROM PARALYSIS

There are cases of paralysis that cannot be cured. But that is far different from saying that every case of paralysis is incurable. There is absolute proof that many forms of this disease are curable. Of the cases that cannot be cured many can be so benefitted that the formerly hopeless sufferer will once more find life worth living.

Attention is called to the remarkable cures that have been effected in cases of partial paralysis, and other severe nervous disorders, by the use of Dr. Williams' Pink Pills for Pale People. Some of these cures are so wonderful as to challenge belief, but in every case the statements have been carefully verified and may be investigated by anyone interested. In this connection the case of Miss B. Millehan, of St. John, N.B., is worthy of the most careful attention. Miss Millehan says: "Some three years ago I was taken seriously ill with diphtheria. The doctor brought me safely through this dreaded trouble, and I was restored to be well. But two weeks later I took a relapse, my throat and limbs becoming paralysed. I could neither speak nor walk. I was under the best of medical care, and after a few weeks was able to sit up in bed, but my throat was still completely paralyzed and I could only utter unintelligable sounds. I was treated by three of St. John's best physicians, for this trouble, and my case was given up as hopeless. A friend asked me to try Dr. Williams' Pink Pills, but I had spent so much on medicine without help that I thought it would be only a further waste of money. However, I felt myself growing daily weaker and weaker, and I decided as a last chance that I would try the Pills. By the time I had taken a half dozen boxes I could walk across the floor, something doctors had told me could never happen again. I still continued taking the pills, my speech returned, and I felt myself in perfect health. My friends thought my restoration nothing short of a miracle, and I think myself that I have to thank Dr. Williams' Pink Pills for my life. I am living to-day, and I feel confident they can do quite as much for others as they did for me."

Dr. Williams' Pink Pills effect cures in cases of this kind because they make new, rich, red blood, which feeds and strengthens the nerves, and tones up the whole system. If you are in need of a medicine give these pills a trial. We are confident you will not be disappointed. Sold by medicine dealers or by mail at 50 cents a box or six boxes for $2.50 from The Dr. Williams' Medicine Co., Brockville, Ont.

SENTINEL, TORONTO, MA

HAD TO STOP WORK FROM THE PAIN

Suffered Ten Years Until "Fruit-a-tives" Cured Him

ST. THOMAS, ONT., May 22nd, 1913.

"I was troubled for ten years with the most distressing Constipation and Indigestion of the worst form.

No one could have been worse with those troubles than I was for this long time.

The pain from Indigestion was so severe that many times, I have had to stop work and lie down until the acute agony passed away.

I took a lot of medicine—in fact, I guess I have tried everything that was advertised—and gave them all a fair test—but got no relief. About a year ago, however, I was advised to try "Fruit-a-tives". I am mighty glad I did as for they seem to be made exactly for me.

They gave results in a very short time and I am sure Free from those distress and enjoying perfect health.

My wife also used "Fruit-a-tives" and we both think they are the best medicine ever made."

J. EDGEWORTH.

50c a box, 6 for $2.50, trial size, 25c. At all dealers or sent on receipt of price by Fruit-a-tives Limited, Ottawa.

Minard's Liniment Relieves Neuralgia.

When Asthma Comes do not despair, turn at once to the help effective—Dr. J. D. Kellogg's Asthma Remedy. This wonderful remedy will give you the aid you need so surely. Choking ceases, breathing becomes natural and without effort. Others, thousands of them have suffered as you suffer but have wisely turned to this famous remedy and ceased to suffer. Get a package this very day.

RHEUMATISM

My New Drafts are Relieving Thousands in Every Stage of this Cruel Disease without Medicine

Send Postal for Dollar Trial FREE

To everyone suffering with Rheumatism I make this unlimited offer: Send me your address and I'll send you

Frederick Dyer

by return mail a Regular Dollar Pair of my New Foot Drafts to try free — fresh from my laboratory and ready to begin their soothing help the minute you put them on. They are working wonders in every stage of Rheumatism, whether Chronic or Acute, Muscular, Sciatic, Lumbago, Gout, or other forms, no matter where located.

Letters are coming on every mail, from all over the world, telling of cures by my drafts in the most difficult cases, even after 30 and 40 years' suffering and after the most expensive treatments had failed. No matter what your case or how many other sufferers have failed, I want you to Try My Drafts Free without a cent in advance. Then, afterwards, if you are fully satisfied with the benefit received, if you feel that you have at last found the long sought cure, you can send me One Dollar. If not, simply write me so, and they cost you nothing. I take your word—I leave it all to you. You can see that I couldn't have any other basis in my Drafts if I did not feel positive that they are more prompt and sure than any other remedy I know. Don't hesitate. Remember, I'm taking all the risk of failure, not you. My valuable illustrated book on Rheumatism comes Free with the Trial Pair. Address: Frederick Dyer, Dept. P619, Jackson, Michigan. Send To-day.

Minard's Liniment Co., Limited.

Have used MINARD'S LINIMENT for Croup; found nothing equal to it, sure cure.

CHAS. E. SHARP
Hawkshaw, N. B., Sept. 1st, 1903.

"I Grow Hair, IDo"

For members of Prof. Geo. A. Garlow

Bald at 16. Fine Hair at 19.

I POSITIVELY Cure all hair and scalp DISEASES. Prevent Baldness. Remove dandruff. GROW ladies' and children's hair rapidly.

I TAKE NO DOUBTFUL cases and positively cure all I do not help. Have restored on all heads that once grew hair or hair to grow on most of the heads that glands are not dead.

I HAVE A PERFECT system of HOME treatment for out-of-the-CITY people who cannot come to me, for any disease. WRITE TO-DAY for Question Blank and PARTICULARS. Enclose stamp and mention this paper.

MY PRICES are reasonable. My cure are POSITIVE and PERMANENT.

PROF. GEO. A. GARLOW

The World's Most Scientific Hair and Scalp Specialist

NO. 14 TORONTO ARCADE

Hours—9 to 12, 1 to 5. Consultation, free.

Constipation

is an enemy within the camp. It will undermine the strongest constitution and ruin the most vigorous health. It leads to indigestion, biliousness, impure blood, bad complexion, sick headaches, and in one of the most frequent causes of appendicitis. To neglect it is slow suicide. Dr. Morse's Indian Root Pills positively cure Constipation. They are entirely vegetable in composition, and do not sicken, weaken or gripe. Preserve your health by taking

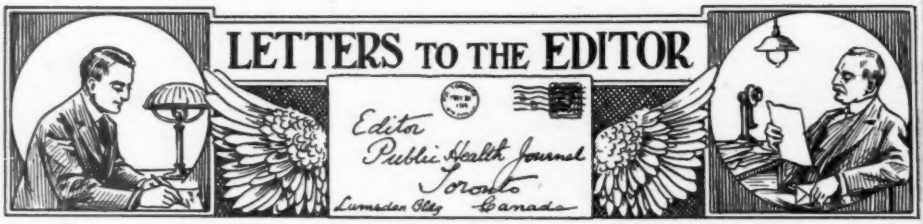
Dr. Morse's Indian Root Pills

Minard's Liniment Cures Burns, Etc.

Spare the children from suffering from worms by using Miller's Worm Powders, the most effective vermifuge that can be got with which to combat these insidious foes of the young and helpless. There is nothing that excels this preparation as a worm destroyer, and when its qualities become known in a household no other will be used. The medicine acts by itself, requiring no purgative to assist it, and so thoroughly that nothing more is desired.

Minard's Liniment Cures Burns, Etc.

From the "Orange Sentinel," 1/4 actual size



A CRITICISM.

Winnipeg, Man., May 20, 1914.

The Editor,
Public Health Journal:

Sir,—I hope you will not feel hurt if I transmit a criticism made by a few of your subscribers here regarding the insertion of much matter not dealing with health or sanitation, in the Journal, as for instance, to take this month's issue, Pauline Johnson's poems and the article by Florence Withrow. These articles, while good and interesting in themselves, are not considered by the subscribers quoted to be suitable for such a journal as yours, and they feel that they would like the whole journal filled with medical and health articles. This is just by the way, as I know that some editors like to get opinions from their subscribers.

Yours faithfully,
INTERESTED.

---

98 North Court St.,
Port Arthur, Ont., May 30.

The Editor
Public Health Journal:

Sir,—Would you be kind enough to give this association an announcement in your next issue as to the 1914 Congress of the same, to be held in the Twin Cities of Port Arthur and Fort William, on the 10th, 11th and 12th of September.

The programme so far contributed promises to be the most interesting and useful the association has yet enjoyed.

Some of the leading features are, the "Review by the Canadian expert in charge of the International Waterways Investigation as to the extent of the pollution of the inland international waters," of the findings and their significance. This takes up the first morning. Prof. John Amyot will contribute this matter. Experts from both sides of the line will take part in the discussion.

A symposium on the undesirable immigrant will take up the last morning of the session. Contributors are Prof. Dean Clarke, University Toronto; Dr. Page, Quebec; Louis Kon, Winnipeg; Dr. MacMurchy, Toronto; Dr. Copeland, ship surgeon Hesperian, and others, including Italian Consul.

The section of Engineers and Bacteriologists have every new phase of treatment of water and sewage, contributed by Mr. Geo. Fuller, consulting engineer, New York; Prof. Brydone Jack, Winnipeg; Dr. Naismith, Toronto; Mr. Dallyn, sanitary engineer, Toronto, and others.

The section of Militia and Transportation Medical Men, has a programme extremely useful to any practitioner.

The section of Medical Inspection is practical from scientific as well as the administrative and financial side. Papers have been obtained by men of acknowledged standing along lines desired by the local committee.

The section of Social Workers has a most interesting and broad programme, provided by full time experts working in the service in Winnipeg and other centers. Mr. Ilder, secretary National Housing Association of Washington, is one of the contributors.

The section of Sanitary Inspectors, Meat and Food Inspectors, have contributions by such men as Tustin Haig, of Winnipeg; Watson, of Regina; Wilson, of Toronto, and Dr. Rutherford, of Calgary.

Two evening meetings will be held, addressed by Hon. Mr. Hanna and Prof. Hill, of London.

Reduced rates are being arranged for. Everything is at its best early in September at the head of the Lakes. All delegates will enjoy their stay here. It is a Canadian Congress. Better come.

Very gratefully yours,
ROBERT E. WODEHOUSE, M.D.,
Convenor of Congress.

WINTER CAMPAIGNING IN CANADA FROM A SANITARY STANDPOINT

By MAJOR J. M. JACQUES,

Permanent Army Medical Corps

Read at the 7th Annual Meeting of the Association of Medical Officers of the Canadian Militia, 25th February, 1914.

SANITATION, or rather the lack of it, has played a most important part in the history of winter campaigns in Canada. Looking back at the two most critical periods in our history, namely, the siege of Quebec during the winter following the battle of the Plains, and again at the second siege in 1775 when the city was invested by the forces of the seceding colonies under Montgomery and Arnold, the part played by the absence of preventive measures came very close to deciding the final issue in either case. In the former against the English, in the latter in their favour. Take the case of the English force under Murray in 1760. Although not actually besieged by an active enemy during the first part of the winter, they were completely shut in from outside aid by nature and a hostile native population.

Although previously warned by the authorities in England, to take every means in their power to protect the troops against sickness, and the inclement weather they were bound to meet, the English commanders apparently paid no heed. Consequently we find within the walls of Quebec when winter set in a force of some 7,000 men, besides women and children, ignorant of the country and its climatic conditions. No adequate provision had been made to lay in a supply of proper provisions or clothing, so that one need not be surprised that scurvey, dysenteries, and cold had made such inroads into the garrison that when spring and de Levis arrived, all that Murray, the English commander, could muster was a force of some "3,000 scorbutic skeletons."

Had not nature intervened in the way of opening up the River St. Lawrence to navigation the city must certainly have fallen. Strange to say the 500 women of the garrison escaped unscathed. In 1775 we find Arnold starting out from Maine with a force of 1,100 in number, composed of hardy young woodsmen, supposedly well inured to the hardships they were likely to meet. It was the pick for this particular service, of the colonial army then encamped before Boston. Here again, apparently, there was almost a total lack of measures looking forward to the protection of the health of the men and care of the sick. Only one result could possibly follow: Starting with a force of 1,100 men on Sept. 18th, he reached Quebec on Nov. 9th, but with a force of only 510, the majority of these being half naked, nearly starved, and totally unfit for any active operations. Desertions caused by the unexpected privations, and sickness, accounted for the remainder. The expedition had already failed. Sickness had deprived Arnold of the overwhelming military advantage of surprise, and had destroyed his original preponderance of numbers. Had sickness been pre-

vented, or even anticipated and provided for, many claim the expedition would have been a complete success. During the march, the men, weakened by lack of food and exposure, readily fell victims to dysentery and cold. Nor did their troubles end here. Montgomery coming up via Lake Champlain, with ranks decimated by maleria, smallpox, dysentery and cold, had rested at Montreal, where his troops secured some much needed winter clothing for themselves, as well as for Arnold's force already before Quebec.

Scarcely had Arnold and Montgomery joined forces when the dreaded smallpox again made its appearance, and by May, 1776, five hundred had died from this disease alone. On May 1st, out of a force of 1,600 men before Quebec, 900 were sick. Let us return for a moment to the sturdy garrison within the city walls. Here was a force of some 1,200 practically couped up within the city for seven months. The officers and men were well acquainted with the Canadian winter and all its rigors, and under an energetic leader had taken every possible precaution looking toward their own welfare. A plentiful supply and winter clothing had been laid by, and we find no record of any undue sickness during the investment.

What a contrast to the conditions found in 1760, and what a different result. It may be noted that during both sieges the attacking forces were lodged in billets, no attempt being made towards any campaign in the open, outside of a few maudering expeditions of one or two days' duration. One of these sent out by Murray in 1760 and consisting of 500 men, returned with 100 of their number suffering from frost bite.

Coming to the more recent winter campaign of the Russo-Japanese War, we find climatic conditions closely simulating our own. In Manchuria while the temperature has a higher average than ours, the fighting was in an open country where the troops had no protection from forests or even deep snow. The battle of Mukden was fought on an open plain, with the temperature ranging from zero to 14 deg. above. There was absolutely no natural protection against the elements, yet the Japanese came through the ordeal practically unscathed by cold, thanks to their very liberal supply of appropriate clothing. The Japanese entered this struggle with eyes wide open, fortified with a complete knowledge of the failures of European nations in the past, and their own experiences in their own war with China. Every precaution possible was taken beforehand to protect the health of officers and men. Strict orders looking to the preservation of health were issued and as successfully carried out.

On these lines the Sanitary Officer of to-day would be relieved of the danger of smallpox in an epidemic form as this could not exist in view of our present knowledge on this subject. Montgomery and Arnold were without that powerful means of prevention, vaccination. The best they could do was to inoculate. Strict quarantine even was denied then, as to enforce such would have meant the loss of the friendship, half hearted though it may have been, of the French-Canadians, and this was all important for the success of any hopes they still entertained of ultimate success.

Scurvey must still be reckoned with, for we note that in the last siege of Port Arthur, the Russians suffered severely from the ravages of this scourge, against which they had apparently made no preparations. This last must still be met by a proper diet, and in its absence anti-scorbutics. The diet will require special attention, for besides scurvy, cold must be combated. Most of us will, I think, admit that the Canadian soldier is provided with a good and plentiful diet. In my opinion complaints are in most cases due to poor cooking rather than faults with the quantity or quality of the ration. An issue of sugar given to the Japanese at the Battle of Mukden it is claimed gave excellent results in protecting the men against cold. This idea is now strongly supported by explorers in the Antarctic regions. Cloth-

ing also is most important. One has only to glance over the list of clothing issued to the Canadian militia for a winter campaign to be convinced of its shortcomings. In many respects articles issued to the Japanese soldier might well be adopted by us. For instance note the felt gloves or mittens, felt boots, blanket overcoat and hood, besides a coat of sheepskin. Even this appears to have been insufficient as we are told that the wounded brought in at Mukden were wearing their summer outfit of clothing in addition to the winter issue. Infectious diseases are much more apt to spread amongst men living in billets, often overcrowded and poorly ventilated, than when living in the open under canvas. A very careful examination must frequently be made for their detection, and strong efforts made to stamp them out should they appear. Fortunately in many cases we are better prepared to combat these emergencies than were the men of '60 and '75.

As a country increases in population and cultivated areas so we find the once pure water supplies rapidly becoming polluted. Water borne diseases have always proved a stumbling block for the sanitarian. As far back as the siege of 1760 we find the use of the wells within the city forbidden and river water recommended. Should a similar condition arise at the present time I fear the latter would have to be condemned as well. Boiling is, I think, the only safe procedure to follow. True, at concentration points, or on lines of communication, some other means of purification, such as filtration or sterilization, might be carried out on a large scale. This, however, does not apply to the man in the field. Here the water bottle would seem to be the article universally available, but for its successful carrying out, a new bottle would need to be devised.

The enforcement of anti-typhoid inoculation might well be thought of. In any campaign the Sanitary Officer must work in perfect unison with the civil authorities. I very much doubt that should war break out in Canada in the future the Sanitary Officer with a force in a winter campaign would have much the same difficulties to overcome as his predecessors in 1760 and 1775.

NOTES.

Major A. E. Snell, Permanent Army Medical Corps, is appointed Assistant Director of Medical Services, 1st Divisional Area, vice Lieutenant-Colonel C. W. Belton, P.A.M.C., transferred to the 3rd Divisional Area. 18th March, 1914.

Lieutenant-Colonel J. T. Fotheringham is transferred to the Reserve of Officers. 21st March, 1914.

To be Captains:—

Lieutenant W. S. Baird. 24th June, 1912.
Lieutenant G. H. R. Gibson. 2nd July, 1913.
Lieutenant G. H. Manchester. 2nd July, 1913.
Lieutenant (supernumerary) C. Woolard. 2nd July, 1913.

To be Provisional Lieutenants (supernumerary):—

Joseph Telesphore Dussault. 2nd January, 1914.
Phillipe Sirois. 2nd January, 1914.
Emile Fortin, 2nd January, 1914.
Joseph Aime Paradis. 2nd January, 1914.
Arthur Gagnon, 2nd January, 1914.
Joseph LeBlond. 2nd January, 1914.
Henry George. 8th January, 1914.
Henry Campbell McCordie. 1st February, 1914.
John Emil Hett. 17th February, 1914.
Thomas Andrew Morrison. 24th February, 1914.

Jules Panet Fremont. 28th February, 1914.
George Beverley Grey Muirhead. 1st March, 1914.
Andrew Pritchard Davies. 2nd March, 1914.
John Brimsley Winder. 2nd March, 1914.
Leroy Leo Hartman. 15th March, 1914.
Robert Wilson. 17th March, 1914.
Joseph Louis Petitclere. 25th March, 1914.

To be Dental Surgeon with the Honorary Rank of Lieutenant—Joseph David Edouard Barras. 2nd January, 1914.

To be Quartermasters, with the Honorary Rank of Lieutenant—Joseph Lagueux. 2nd January, 1914.

Sergeant-Major Harry Eakin Fenwick. 18th February, 1914.

To be Nursing Sister (supernumerary)—Annie Ready Hinchey. 26th February, 1914.

CONFIRMATION OF RANK.

The undermentioned provisionally appointed Officers, having qualified themselves for their appointments, are confirmed in their rank from the dates set opposite their respective names:

Supy. Lieutenant F. S. Ruttan. 14th June, 1913.
Supy. Lieutenant E. B. Alport. 21st August, 1913.

CERTIFICATES.

The following certificates are granted:

Hon. Capt. and Qr., Mr. W. H. Irvine, No. 15 Field Ambulance, Field Officer.

W. E. Ogden—Equitation.
W. E. Ogden—Captain.
O. C. J. Withrow—Captain.
J. A. Amyot—Captain.
G. M. Hume—Captain.
J. E. Daignault—Captain.
J. B. Winder—Captain.
R. E. Wodehouse—Captain.
J. E. Hett—Captain.
G. C. Hale—Captain.
H. W. Kerfoot—Captain.
J. D. McQueen—Captain.
S. R. Johnston—Lieutenant.
K. A. MacCuish—Lieutenant.
A. E. Logie—Lieutenant.
A. E. Macauley—Lieutenant.
F. E. M. McCallum—Nursing Sister.
A. R. Hinchey—Nursing Sister.
E. F. Hudson—Nursing Sister.
E. M. Drysdale—Nursing Sister.
B. J. Blewett—Nursing Sister.
F. A. Hunter—Nursing Sister.

Leave of absence, with permission to travel abroad, has been granted as follows:

Captain E. C. Cole No. 1 Clearing Hospital, from the 23rd April to the 1st September, 1914.

Captain R. J. MacMillan, R.M.O., G.G.B.G., six months from the 1st June, 1914.

Major C. A. A. Warren, No. XI Field Ambulance, five months from June 1st, 1914.

Major G. A. Winters, No. X Field Ambulance, six months from May 1st, 1914.

TRANSFERS.

The following transfers are authorized:

Captain R. P. Wright, from 4th Division to 5th Division.

POSTINGS.

The following officers are posted for duty as stated:—

Captain R. P. Wright reverts to the Regimental List from No. V Field Ambulance.

Captains R. P. Wright, J. Vaillancourt, A. R. F. Hubbard, E. Verge and R. C. G. Geggie are detailed for duty to No. VII Field Ambulance.

Captain R. P. Wright is detailed to command the unit.

Captain J. S. Boyd reverts to the Regimental List from No. X. Field Ambulance.

Lieutenant (Supernumerary) E. L. Stone is detailed for duty to No. III Cavalry Field Ambulance and to be borne supernumerary to the establishment.

Provisional (Supernumerary) A. P. Davies is detailed for duty as supernumerary Medical Officer to the 43rd Regiment "The Duke of Cornwall's Own Rifles."

Provisional Lieutenant (Supernumerary) R. Wilson is detailed for duty as supernumerary Medical Officer to the 4th Field Company, Canadian Engineers.

Provisional Lieutenant (Supernumerary) H. George is detailed for duty as supernumerary Medical Officer to "The 35th Central Alberta Horse."

Provisional Lieutenant (Supernumerary) J. F. MacIver is detailed for duty to No. VII Field Ambulance.

Captain O. M. Wilson reverts to the Regimental list from No. II Field Ambulance.

Lieutenant O. C. J. Withrow is detailed for duty to No. X Field Ambulance.

Lieutenant C. A. Delage reverts to the Regimental list from the 87th Quebec Regiment.

Lieutenants C. A. Delage, G. J. Boyce and J. P. Walsh are detailed for duty to No. VII Field Ambulance.

Lieutenant R. M. Gorssline, P.A.M.C., will be in charge of the laboratory at Niagara Camp during the summer months, both for the Militia and the Cadets.

To Lieutenant-Colonel
JOHN T. FOTHERINGHAM
Canadian Army Medical Corps
Dear Comrade, We the Medical Officers of Toronto Garrison desire upon the occasion of your retirement from active duty to express our appreciation of your devoted services to our King and Country whilst serving with us in the Medical Branch of the Canadian Militia.
The deep interest always manifested by you in the organization of the Medical Units of this Garrison will never be forgotten, and your splendid work as D.M.S. and D.A.D.M.S. of No 2 Division will ever be an incentive for emulation by all its future officers.
Your connection with us has been particularly valuable and instructive. The readiness for the arduous duties of your position and the kindly spirit shown to all your Brother-officers will always be remembered in the days yet to come.
Though your official severance from us is deeply regretted by all Ranks, yet we all know that we can always rely upon your advice and assistance.
We congratulate you upon receiving the Long Service Medal, and would tender to Mrs Fotheringham, yourself and family all good wishes and pray that Divine Providence may long spare you all for many years of happiness, prosperity and success.
Toronto. 21st May 1914.

A very beautiful presentation made to a most highly esteemed comrade, after twenty years' service. The magnificence of the coloring, unfortunately, has not been reproduced.

FORT WILLIAM

By PETER McKELLAR, F.G.S.

FORT WILLIAM occupies a unique situation in the Dominion of Canada, lying about half way between the Atlantic and Pacific Oceans, on the main highway, at the head of the Great Lakes navigation. The immense traffic between the East and the West, chiefly, must pass through here. From this fact, it is evident the Thunder Bay Cities, Fort William and Port Arthur, will be a great manufacturing center, and in time one of the greatest cities in the Dominion of Canada.

Canada or "New France," as it was at first called, was practically in the possession of the French nation from 1534 until 1763.

Up to 1763, the fur trade was the chief industry in Canada, barring the great coast fisheries, in which a number of countries participated. On the main land progress was very slow for many years, owing to the extreme suffering, privation and destruction of life, by reason of the natives, the fierce and treacherous Indians.

The French traders, the brothers Dulhut and Tourette, built the first trading post on the north shore of Lake Superior in 1678, on the Kaministiquia River (where Fort William now stands), and named it "Fort Caministigoyan," the name of the river at that time. That was seven years after the real discovery by white men of the great Mississippi River.

Through the Kaministiquia route, Rainy Lake, Lake of the Woods and the great North-western prairies were discovered by white people. The chief discoverers were De Neyon, an explorer, and the distinguished La Verendrye. The route to the Rocky Mountains was discovered and explored by the middle of the seventeenth century.

In 1717, La Noue built a fort or post on the Kaministiquia River, by order of the French Government, for use, as a stepping stone, to reach the "Western Sea."

The French explorers persevered and suffered untold hardships in their endeavor to reach the goal, but for want of means (which the Government should have supplied), they were obliged to have recourse to trading with the Indians for furs, and for this reason years were wasted, and the object of the French Government not attained, when the French control of the country passed to the British in 1763.

During the French regime, the Kaministiquia route to the West was chiefly used. After the accession of the British the Grand Portage, by Pigeon River route, was used until after the establishment of the American boundary. About 1798, the X. Y. and N. W. Companies opened up the Kaministiquia posts. The North West Company started to build the "New Fort" in 1800. In 1803 all North-West Company stores were moved from Grand Portage to the New Fort. The N. W. and X. Y. Companies had joined under the name of "North-West Company," and then christened the New Fort "Fort William" in honor of "The Honorable William McGillivray, a distinguished member of the united company. From this date, for nearly a half century, Fort William was a very important commercial center in Canada.

The fur trade was the chief industry in Canada up to about the middle of the nineteenth century. Dr. Bryce remarks "Fort William is the principal factory of the North-West Company in the interior and a general rendezvous of the partners. The agents from Montreal and the proprietors wintering in the North, nearly all

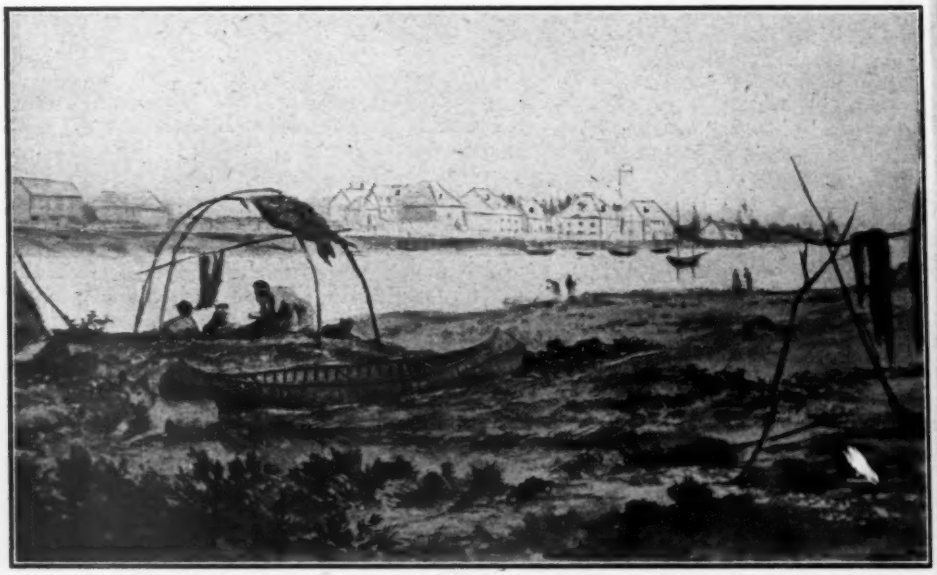
assemble here every summer and receive the returns from expeditions, and discuss the interests of their commerce."

Frenchire, a member of the Astor party, described Fort William in glowing terms, showing it as a fort with palisades fifteen feet high, enclosing a pretty village with large buildings, banquet halls, offices, storehouses and shops for the manufacturing of various materials required. Here the partners, proprietors and officers of the company (the Lords of the Lakes and Forests), lived in luxury and hilarious festivities part of the time. Outside the fort were large encampments of the employees, two parties, one on the east and one on the west numbering from three hundred to four hundred men each. It was stated by Le Houtain that the population of Fort William in the early part of the nineteenth century was no less than three thousand.

After the amalgamation of the North-West and X. Y. Companies, the Hudson's Bay Company and the new company still continued the violent strife. On one occasion Lord Selkirk, of the Hudson's Bay Company, in 1816, with soldiers and artillery, captured Fort William, and took the chief officers of the North-West Company in chains to Montreal for trial before the Court. The following year the Post was restored to the company by proclamation of the Government. For years the trouble continued, until finally in 1821 the two great companies joined under the name of "Hudson's Bay Company," from which time strife and bloodshed in the fur-trading business ceased. Even blood relations, who had been deadly enemies, became good friends, and the fur-trading business prospered as it never had done before.

Fort William was an important business place for many years, but as the Red River country became more populous, the trade here gradually decreased. Even when I came here in 1863 there were many thousands of dollars' worth of furs taken in and packed for London. Every spring the traders, with their great canoes loaded with furs, would arrive. There would be great joy and bustle around the Fort at the approach of the first canoes; men, women and children, half-breeds and Indians would be out to cheer the vogageurs

THEN



1856

with their bright colored toques and sashes, and singing their boat songs while paddling with all their might. There would be a jolly time for a few days. The forest Indians would come in with their families and spend most of the time around the Fort and at the Mission in the summer. There would be a large encampment of white birch bark wigwams below the Fort.

The traders or clerks on their arrival with the furs would be engaged the rest of the summer in making up their winter accounts, packing up the furs in large bales, similar to cotton bales, for shipment to London. The evenings were occupied in various amusements, such as playing ball, etc. In the fall, they would have the supplies packed ready for the winter posts. On the whole, they were a contented people. "Governor McIntyre," as he was justly called, was in power and ruled with honesty and sagacity ,and no one disputed his authority.

Fort William, at that time, was like a farm, with a large barn; chickens, ducks, geese, horses and cows were there. The latter were made to swim across the Kaministiquia River every morning and back every evening to the barns. To see them all swimming was an interesting sight.

The Hudson's Bay Company's general stores in Fort William had a large supply of first and second class goods. The Americans, when steamers would call, would purchase quantities of goods, as they considered them better than ordinary.

The Hudson's Bay store held the monopoly in Thunder Bay until the latter part of the eighteen seventies. John McLaurin

NOW

1914

started the first independent store in Fort William in 1865, and Thomas Marks started the first at the Landing (Port Arthur) in 1868, soon after the starting of the Thunder Bay Silver Mine and Stamp Mill.

Fort William ceased to be a fur-trading post in 1881. A few years after, the Hudson's Bay Company started a general store on Simpson street.

told the late Lord Strathcona about the tablet we intended erecting. His Lordship said he was pleased to hear it, as only a few of the objects in Canada honored in that way were so worthy—that Fort William at one time, through the works of the fur traders, was one of the chief business centers of Canada. Yes! when London, Hamilton, Toronto (Little York), Ottawa and Kingston were only hamlets, Fort

VICTORIA AVENUE

The Thunder Bay Historical Society purpose building a granite tablet in Fort William to commemorate the Fur Traders in their illustrious achievements and discoveries, which redound to the honor and glory of Canadians. We have chosen Fort William as the most suitable place for the monument, as it is the principal "gateway" through which the intrepid pioneers passed, off and on, for the last 200 years to accomplish the great work. When I was in London in March, a year ago, I

William was a busy center, second only to Montreal.

This Tablet will be a real Canadian monument and built by voluntary contributions at a cost of about eleven hundred dollars, and we hope to have it finished early next winter.

The first contributor is the "Women's Canadian Club" of this city, and a record of all contributors will be kept by the Society.

Preliminary Announcement

PROGRAMME

Sept. 10, 11, 12

	THURSDAY.	FRIDAY.	SATURDAY.
9.30 to 12.30	Registration Annual Reports. 11 a.m. PROF. JOHN AMYOT International Waterways Findings.	SIX SECTIONS MEET.	Symposium on the "UNDESIRABLE IMMIGRANT."
12.30 to 2.00	LUNCH.	LUNCH.	LUNCH.
2.00 to 4.30	GENERAL SESSION. — PAPERS.	GENERAL SESSION. — PAPERS.	GENERAL SESSION. — PAPERS.
4.30 to 6.30	GARDEN PARTY. Guest of Major and Mrs. Sam Young. Mayor City Ft. William	Guests of Mr. & Mrs. Jas. Whalen Yacht "Sigma," Two Harbors.	Guest of Local Arrangements Commitee. Auto Tour of Two Cities.
6.30 to 8.30	DINNER.	DINNER.	DINNER.
8.30	Address by HON. W. J. HANNA, — Provincial Health Exhibit—Moving Pictures.	Social Function. Guests of Thunder Bay Medical Society.	Address by Prof. H. W. Hill, D.P.H., Institute Public Health, London, "Bacteria and Disease." Provincial Health Exhibit—Moving Pictures.

THE ONTARIO HEALTH OFFICERS' ASSOCIATION

THIS Association held its 3rd annual conference in Convocation Hall on Thursday and Friday the 7th and 8th of May last under the presidency of Dr. Charles J. Hastings, Medical Officer of Health for the City of Toronto. There were about 300 members present, and the programme of papers was a most interesting and instructive one.

On the first morning of the meeting papers were given by Dr. T. W. Vardon, of Galt, on the "Difficulties of the Medical Officer of Health in Town and Country" and by Dr. John W. S. McCullough, Chief Officer of Health, on the "Duties of the Medical Officer of Health in Ontario." These papers were productive of very free discussion.

A luncheon was given by the City of Toronto on the first day when an address of welcome was given by his Worship the Mayor; this was replied to by Doctors Mc Cullough, of Toronto, Brien, of Essex, and Powers of Rockland; Controller McCarthy and others also made short addresses.

At the second session the President's address was given by Dr. Hastings indicating "The Value of Public Health Matters From the Social and Economic Sides." Dr. H. W. Hill, of the Institute of Public Health, London, gave a very exhaustive paper on "The Transmission of Typhoid Fever" and Dr. J. A. Amyot, Director of Laboratories, gave a capital "Interpretation of a Sanitary Analysis of Well Water." The discussion upon these subjects was prolonged, many questions were asked, and we feel sure that the members derived great benefit from these papers.

In the evening the public meeting was held in Convocation Hall where a series of moving pictures, illustrating public health questions, was given by the Provincial Board of Health. This was followed by a most lucid address upon "Therapeutic Vaccines and Sera" by Dr. J. G. Fitzgerald, Associate Professor of Hygiene, University of Toronto. The doctor described the difference between vaccines, serums and antitoxins, and incidentally pointed out the great value to the province, from the work of the Provincial Board of Health, in placing the means of prevention of Rabies and Typhoid Fever, as well as the treatment of Diphtheria within the reach of the general public at greatly reduced prices. The doctor pointed out that in the treatment of diphtheria, especially in cities, the very poor and the very rich were unlikely to suffer from the non-use of antitoxin in proper doses, the poor being supplied by the Board of Health and the rich by their own ample means. In the case of those of the middle class the price of antitoxine has been so great that adequate use of it has not hitherto been made. He pointed out that in the Isolation Hospital in Toronto the death rate from diphtheria is 6.45 per cent., while the rate throughout the city is 16 per cent.

The recent action of the Provincial Board of Health in making arrangements for a supply of this product has cut the price to about one-quarter of that heretofore in existence.

There was a large attendance at the public meeting and the audience was amply repaid.

On Friday morning two papers were given upon milk. The first on "Milk Supply of Smaller Cities and Towns" by Dr. D. A. McKillop, Medical Health Officer of St. Thomas; the second "How Toronto Controls Her Milk Supply," by Hoyes Lloyd, B.A.Sc., of Toronto. Both of these papers were most practical and were freely discussed.

The question of the fees paid the Medical Officers of Health in small towns and rural districts was brought up by Dr. W. E. Crain, of Crysler. It was pointed out that in the rural districts, especially, the Medical Officer of Health, although his tenure of office has been made secure under the Public Health Act, still continues to receive a very inadequate salary. The discussion was for the purpose of pointing out some way in which this injustice could be remedied. The subject provoked a very vehement discussion. Some members took the view that a minimum salary for these officers should be laid down by the Legis-

lature, others took the view that the Medical Officer of Health's salary would be increased when he showed the public that he was earning more money than he now received. Finally a committee of seven members, one from each health district of the province, was appointed to discuss this question and report upon it at the next meeting of the Association. The members of the committee are:

Dr. J. W. Brien, of Essex.
Dr. T. W. Vardon, of Galt.
Dr. Emerson Bull, of Lambton Mills.
Dr. T. W. G. McKay, of Oshawa.
Dr. W. E. Crain, of Crysler.
Dr. W. J. Cook, of Sudbury.
Dr. C. N. Laurie, of Port Arthur.

The Question Drawer was opened by Doctors Amyot and McCullough who gave answers to a large number of questions.

At the luncheon, given by the Provincial Board in the Parliament Buildings, the Reverend John McNeill, of Cook's Church, delighted the audience by his humorous remarks.

In the afternoon of the second day there were two papers in reference to Schools and School Children; the first on "Sanitation" by Dr. S. F. Millen, Medical Officer of Health, Woodslee, and the second on " "Inspection of School Children for Efficiency" by Dr. W. E. Struthers, Chief Medical Inspector, Toronto Public Schools. Dr. Millen made some severe criticism upon the sanitary conditions of schools throughout the province, backing up his statements by facts and figures; while Dr. Struthers gave a full description of some of the means undertaken by the Board of Education of Toronto for the improvement of the physical conditions of the children in the public schools. These papers were ably discussed; the remarks of the various speakers showing the greatly increased interest taken in public health matters by the members of the Association.

A committee on papers for the next meeting of the Association was appointed to consist of:

Dr. D. B. Bentley, of Sarnia,
Dr. A. E. Speers, of Burlington,
Dr. T. A. Bertram, of Dundas,
Dr. J. W. S. McCullough, of Toronto.

Dr. R. W. Hall, Medical Officer of Health, Chatham, and Dr. A. W. McPherson, Peterborough, were appointed President and Vice-President respectively.

This Association is now on a very substantial footing, the attendance of such a large number indicating the great interest taken in Public Health questions.

Under the Patronage of Field Marshal, His Royal Highness, The Governor-General

THE FOURTEENTH ANNUAL MEETING

OF

THE CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS

WILL BE HELD IN

THE TECHNICAL COLLEGE, HALIFAX, N.S.,

ON

Monday and Tuesday, 13th and 14th July, 1914

Beginning on Monday, at 10 a.m.

Veterinary Hygiene

THE WORK OF A VETERINARIAN IN A GREAT GITY

By ANDREW RICHMOND, V.S., B.V.Sc.,

Chief Veterinary Inspector, Department of Public Health, Toronto

I HAVE the honor to submit herewith a report of the work carried on by the Division of Veterinary Inspection of Meat and Slaughter Houses during the year 1913.

There were four Veterinary Inspectors in charge of the work. No outstanding features mark the work of this Division for the year, but considering the conditions under which we labored, our efforts to safeguard the public health in our particular line have been effective. Due to the conscientious and careful work performed by the members of my staff, and to the co-operation of the many firms with which we have had to deal, we are able to show a higher number of post-mortems held, and a very much greater list of condemnations made, comparing the results attained with those of the preceding year.

During last spring we devoted what attention we could spare to the question of immature calves. In this work we were greatly assisted by our firms, by their requests to inspect their intended purchases ante-mortem at the stock yards. Calves which did not reach the standard age were rejected by us, and either subsequently sold to be placed upon cows, or fed until mature, or purchased for what they were worth to the butcher and later condemned by us in the abattoirs.

We were assisted on several occasions by Mr. Attwell of the Food Inspection Division, and were able to make a number of seizures of veal carcases which had been either shipped into the city by rail or brought in by farmers or country butchers.

Until such time as the Municipal Abattoir is in operation, and we are able to act under regulations requiring all meats and products offered for sale for food within the city limits to have passed inspection, we cannot control the situation.

As I stated in my last year's report, our work in general, but especially in regard to sanitary measures, has of necessity been of a somewhat "laissez-faire" nature, and our policy has therefore been one of conciliation rather than prosecution.

We endeavored to maintain a standard of sanitation commensurate to the existing conditions, and by the exercising of a little judgment in this regard, and with the knowledge that in no event could a standard approaching perfection be attained, we have managed to progress for the time with exceptionally few complaints being forwarded to the Department, and are able to report only a feeling of good will on the part of the wholesale firms towards the department.

Charges contained in the small number of complaints sent to the Department offices, and investigated by members of this Division, were in no case found to be based upon facts. We are of the opinion that notwithstanding the large number of slaughter houses, the inadequacy of the present system of inspection, and the accessibility of the Toronto market for the sale of farm and country killed, uninspected meats, the supply of meat to this city is as wholesome as to any city in the country.

There appears to be somewhat of a misconception on the part of a great number of the public in general, and certain public men in particular, as to the genuine necessity for a Municipal Abattoir.

The fact that it is being built solely to

concentrate the slaughtering of all food animals, facilitating inspection and ensuring that proper sanitary regulations be practicably enforced, thus eliminating all evils attendant upon the present system seems to have been lost sight of, and that the Abattoir's great function will be to enable men to combat trusts and reduce the cost of meat appears to be the popular impression.

The Abattoir in itself cannot possibly reduce the price of meat, but may act as a regulator in future in this regard. There is no combine at present in existence in Toronto, and competition is as keen between the larger abattoirs as it is amongst the small wholesalers. The man who occupies a space and avails himself of the many advantages which the Abattoir will present, is incidentally placed upon the same basis as the large packers, but the price of meat will remain just as high until the supply increases and approaches nearer the demand.

There are, of course, several factors responsible for the existing shortage of cattle and prices of meat, viz: indiscriminate slaughter of calves and breeding stock throughout the whole country; the lack of mixed farming; breeding of illbred stock in certain large districts; removal of export duty; lack of proper regulations governing cold storage; vast immigration, etc.

I am most enthusiastic over the abattoir question because other cities are waiting and watching, and as a member of the Department of Health I am most anxious to see it a success; but everything depends upon the question of management and superintendency, so that unnecessary work be prevented, expenses kept down in every way possible, and that the Abattoir be treated as a great public utility for the benefit of the citizens who have built it and are maintaining it.

Following is a statistical report of the work of my division:

Total number of food animals slaughtered during 1913 was 124,996, including

Cattle	33,735
Sheep and lambs	46,931
Calves	20,065
Swine	24,265

A decrease of 3,866 animals is found on comparing the figures with those of 1912.

Considering the added adverse conditions to which the small wholesaler has been subjected, by the closing down of the city market, increased opposition on the part of the large packer, scarcity and high price of cattle, etc., it is somewhat surprising to find that the decrease is not much greater. All animals, with the exception of a small number of older cows killed principally by the Jews, were of as high a quality as could possibly be procured. This fact is contrary to a quite popular idea that the small slaughter house is an outlet for inferior food animals.

The total number of animals killed subject to our inspection was 35,361, including

Cattle	10,022
Sheep and lambs	9,622
Calves	8,559
Swine	7,158

Increase over 1912 of 6,915 animals.

Total percentage inspected was 28.2, including:

Cattle	29.6%
Sheep and lambs	20.4%
Calves	42.6%
Swine	29.4%

Total number of dressed carcases examined and approved but not stamped, 21,790, including:

Beef	8,960
Mutton and lamb	8,937
Veal	2,453
Pork	1,440

Condemnations

The following condemnations were made upon post-mortem examinations and the carcases destroyed:

Animals.	No.	Cause.
Cows	12	Generalized Tuberculosis
Heifers	3	Generalized Tuberculosis
Steers	3	Generalized Tuberculosis
Bull	1	Septicaemia Tuberculosis
Heifer	1	Septic Peritonitis
Steer	1	Generalized Actinomycosis
Heifer	1	Generalized Actinomycosis
Calves	149	Immaturity
Calves	5	Omphalo-Phlebitis

Calf	1	Poly-Arthritis
Calf	1	Peritonitis
Sheep ..	3	Bruises
Sheep ...	2	In dying condition
Sheep ..	1	Gastro-Enteritis
Sheep ..	1	Emaciation
Sheep ..	1	Bruises
Hog	1	Pleuro-Peritonitis
Hog	1	In dying condition
Total	188	animals

Carcases	No.	Cause.
Veal	139	Immaturity
Beef	1	Acid Fermentation
Beef	1	Found dead
Mutton .	2	Found dead
Mutton .	1	Found dead
Pork	1	Decomposition
Total	145	Carcases

Primal Parts and Portions.	Number.
Livers	599
Heads	473
Plucks	569
Hearts	174
Sets of Intestines	349
Sets of Lungs	206
Quarters, Kidneys, Cheeks, various portions of carcas, foetuses	362
Total	2,732

Percentage of animals evidencing some pathological or other condition necessitating either complete or partial condemnation, 6.3.

Among the diseases and conditions found during the year are the following:

Tuberculosis, Septicaemia, Immaturity, Actinomycosis, Pneumonia, Injuries, Abscesses (various), Congestion, Fractures, Adhesion, Hydro-Nephrosis, Bruises, Peritonitis, Cirrhosis, Found Dying, Gastro-Enteritis, Parasytic Cysts (various), Poly-Arthritis, Decomposition, Found Dead, Omphalo-Phlebitis, Acid Fermentation, Emaciation, Cysts, Jewish Inflation, Filth, Capillary Anfiohatosis, Hæmorrhoids, Vermin Eaten, Neopalsma (various), Ulcers, Green Mould, Gelatinous Degeneration, Presternal Calcification, Carpitis, Multiple Calcification, Melanosis.

There were 659 animals "held" at the Stock Yards during the year to be slaughtered subject to inspection. While the time of one inspector for four half days per week spent at the yards might seem unjustifiable, it is our only means of making an ante-mortem examination of animals purchased by the small butchers, and of notifying them, or of giving them an opportunity of notifying us should a purchase have been made of an animal requiring post-mortem examination. We have endeavored to divide our inspections amongst the various firms in as fair a manner as possible, the amount of inspection given being based upon the number and quality of the animals slaughtered. Our experience has taught us, that even though the results attained are not as satisfactory as we might have desired, nevertheless we have at least acted as a most valuable "prophylactic."

Besides our regular inspection work, I have made several minor investigations throughout the city, and have been in attendance on a number of occasions of sickness and lameness affecting the department horses stationed at the morgue.

Reports Submitted During the Year.

1 Report on Standard of Veterinary Education with recommendations re future of appointees to the Department of Public Health.

1 Report re percentage of Tuberculosis in Dairy Cows.

1 Report re attendance at A.V.M.A. Convention at New York City.

12 Monthly reports.

On behalf of the members of my Division, I beg to extend our feeling of appreciation of the favorable consideration given to any recommendations we have made during the past year, and for the reasonable view taken of the duty of the Veterinarian in Public Health matters.

It is not alone encouraging to ourselves as members of this department, but also to those men who may not yet have graduated to know that the field of work for our profession is expanding, and that as towns and cities throughout the Dominion spring up and develop, the best men in our profession will be called upon to act in their particular sphere as public health servants.

MONTHLY JOTTINGS

The public health veterinarian is a comparatively new official, and his work in meat inspection has amply demonstrated his fitness to take part in the conservation of human life. It is freely conceded that the veterinarian is, by virtue of his training, the official on whom the duties of meat inspector naturally falls; but it is not usually granted that he, in the absence of a fully organized milk division, should have the work of controlling the milk supply.

It will be freely admitted that in the work of controlling the milk supply only competent men should be employed. In some of the smaller towns it is customary to appoint the police constable as milk and dairy inspector for the community. We do not know of any constable having the scientific training to enable him to perform the duties of milk inspector.

This is an age of specialization, and the fully organized milk division of a Health Department should have in its employ bacteriologists, chemists, veterinarians, and trained milk inspectors; but it is not always possible, even in some of the larger cities and towns to secure adequate appropriation to secure the services of these officials, and indeed the size of some communities does not justify appointing so large a staff.

In the localities in which only one or two officials are available to control all branches of milk inspection, the logical and economic solution lies in selecting an official that has, in some degree at least, the qualifications of the chemist, bacteriologist, and animal physician. A glance at the curiculum of the modern veterinary college, clearly shows that the veterinarian is the best substitute where a fully organized staff is not permissible. True, his training in such subjects as chemistry may be superficial, but this can not be said regarding his work in bacteriology, and other subjects pertaining to sanitation.

After all, the control of a milk supply is essentially related to the problems of bacteriology, preventive medicine and hygiene, and who is better fitted to deal with the conditions and diseases of the cow that injuriously affect the milk supply than the veterinarian? The writer does not desire to underestimate the importance of obtaining a milk supply of a legal food value, but it is vastly more important from the standpoint of public health to obtain a clean milk supply, not a dilution of germ laden fæces.

The time is not far distant when the veterinarian will be even better equipped to take his part in solving some of the great problems of public health work. There is an increasing demand for the specially trained public health veterinarian; and this demand should be recognized by the authorities of the various veterinary institutes, and a special course inaugurated to meet this contingency.

An announcement in several United States veterinary journals states that an examination for the position of Food Inspector for the City of Savannah, Georgia, will be held in June. The examination will be under the supervision of Dr. Young, Health Commissioner for the City of Chicago, under the supervision of Prof. M. J. Rosenau, Harvard University, under the supervision of Surgeon-Gen. Rupert Blue, U. S. Public Health Service, Washington, D.C., and under the supervision of the Board of Examiners, City Hall, Savannah, Ga. The term of office will be for three years, beyond political interference; salary $2,000 per annum, the examination to cover pathological and bacteriological veterinary medicine and meat, and other food inspection.

The health authorities of Savannah are evidently thoroughly alive to the importance of the fact that only men with the highest qualifications should be appointed to carry on this particular work. The prescribed subjects leave the choice practically limited to members of the veterinary profession. The salary is a fair one, and the announcement that the appointee is to be unhampered by political interference is highly commendable. Would that every town and city in Canada looked to the matter of efficiency in selections of this kind instead of political or other "pull" as is so frequently the case.

The Sanitary Inspectors' Association of Western Canada

President—E. W. J. Hague, Assoc. Roy. San. Inst. Vice-Presidents—Western Ontario, W. E. Stanley, Assoc. Roy. San. Inst., Manitoba, P. B Tustin, Assoc. Roy. San. Inst.; Saskatchewan, Thos. Watson, Assoc. Roy. San. Ins.; Alberta, J. J. Dunn, Assoc. Roy. San. Ins.; British Columbia, F. L. Glover, Assoc. Roy. San. Ins. Executive Committee—W. J. T. Watt: Cert. Inc. San. Assoc., Scotland; Arthur Rigby Assoc. Roy. San. Ins.; W. F. Thornley, Assoc. Roy. San. Inst.; F. J. Johnson. Assoc. Roy. San. Inst. Secretary-Treasurer—Alex. Officer, Cert. Inc. San. Assoc., Scotland.

SMOKE NUISANCES; THEIR ABATEMENT AND PREVENTION

By W. F. THORNLEY

Deputy Assistant Chief Health Inspector and Smoke Inspector, Winnipeg, Man.

LET us at the outset define these terms. What is a smoke nuisance? What do we mean by "abatement" and by "prevention"?

The word "nuisance" is of Latin derivation: nocentia, from nocere, to hurt, and means something doing harm or causing trouble, that which is offensive, and—used in Public Health phraseology—dangerous or detrimental to health.

"Abatement" means making less; or the amount by which something is reduced, or even mitigated.

"Prevention" means the act of preventing, or stoppage of action.

Therefore, when we speak of smoke nuisances we refer to smoke which hurts, or is doing harm, or causing trouble, or is offensive, or dangerous or detrimental to health.

And when reference is made to smoke nuisance "abatement" we mean the nuisance is reduced, and if the thought is continued to total abatement, we mean the nuisance is absolutely abolished; this is always the aim, or should be, of the smoke inspector; he should not feel at ease with himself until his object is attained.

Smoke nuisance prevention means the stoppage of action or actually preventing the occurrence of the nuisance, which after all is probably the ideal condition.

Smoke is the result of incomplete combustion; and the black or grey volume emitted from the chimney which we call smoke consists of myriads of minute particles of unconsumed carbon mixed with vapors and gases given off in the process of combustion, and are only visible because the combustion is incomplete.

Complete combustion is only attained when the fuel burns with a bright or incandescent flame over the entire surface of the grate; blue flames, dark spots in the fire and the appearance of smoke are the principal evidences of the lack of the necessary air required above the grate to ensure complete combustion.

The air admitted to a fire or furnace for combustion is composed of a mechanical mixture of principally oxygen and nitrogen, in proportion by weight of 23% of oxygen and 77% of nitrogen, or by volume, 20% oxygen and 80% nitrogen.

The oxygen is the only gas used, the nitrogen being useless as an aid to combustion.

More air is needed in the furnace or fire than is actually required for combustion of the fuel contained therein; this excess of air is necessary to dilute the gases of combustion and ensure that each particle of hydrogen and carbon will be brought into contact with the necessary quantity of oxygen to consume it.

Combustion is defined as rapid oxidation accompanied by the evolution of light and heat.

In order to obtain complete combustion in a furnace or range or stove, the fuel must be of the correct nature as will admit of the above conditions.

The stove, range, heater or furnace must be so constructed as to allow the correct amount of oxygen to enter and come into contact with every particle of hydrogen and carbon given off in the process of combustion.

When any of these conditions are lacking, combustion is incomplete and smoke nuisances result.

The object in view in attaching the various smoke consuming or preventing equipment to boilers is to harmonize the above conditions and ensure complete combustion.

The lack of such conditions as outlined above and consequent incomplete combustion may be due to various causes, viz., unsuitable fuel for a certain type of boiler, defective or improperly formed bridge walls or arches, improperly constructed chimney, smoke stack or flues; carelessness or incompetence in methods and practice of firing; forcing the boilers beyond their normal capacity; defects in boiler setting; lack of sufficient draughts.

It might be useful information at this point to state briefly how a boiler should be fired.

(1) The fire should be fairly level and of uniform thickness, except at the bridge wall, it should be thicker than at any part; this arrangement for firing encourages a uniform and regular combustion over the entire grate area; for the air passes more freely through the fire near the bridge wall and the thicker mass of fuel retards its passage.

(2) The fuel should be supplied in small quantities and at frequent intervals if hand firing be resorted to.

(3) The incandescent mass should be pushed towards the back of the fire and the green fuel placed on the white hot mass in front, or, some first-class engineers prefer centre firing, that is the hot fire is pushed to each side of the fire space and the green fuel deposited on the incandescent mass in the centre.

This method should always be adopted when using a "caking" coal in hand firing and is known as a "coking" fire.

(4) When using anthracite coal, coke, semi-anthracite or any mixtures of these types of fuels, best results are obtained when the fuel is supplied in fairly small quantities and evenly distributed over the entire grate area; keeping in mind the fact that the greatest thickness should be near the bridge wall.

(5) Every part of the grate area should always be well covered with the fuel.

(6) The practice of wetting the fuel before firing is not advocated, for a waste of heat results and it promotes corrosion.

(7) If the fuel in use has a tendency to clinker and the clinkers adhere to the bars on sides of the furnace, it is a good practice to keep the ashpit well supplied with moisture, steam or water, as the vapors passing up through the fire will check and even prevent clinkering.

(8) The average thickness of a fire under a boiler should be as follows:

(a) Anthracite or hard coal, 6 to 8 inches;

(b) Bituminous or soft coal, 8 to 10 inches;

(c) Semi-bituminous, Pocahontas, 6 to 7 inches;

(d) Coke, 10 to 12 inches.

The thickness of coke may be reduced if used with Anthracite screenings or pea coal.

(e) Large lumps of coal should not be thrown in the fire; the largest lumps should not be more than 3 or 4 inches in thickness.

(f) For a furnace with a poor draught the fire must always be thin.

Fuels.

The principal fuels used in this country are wood and coal; for boiler purposes wood is not so much used as it was a few years ago; its decreasing popularity resulting from the increased cost of wood; from an engineer's point of view wood is an excellent fuel, and may be adapted for practically any type of boiler; the best kinds of wood for boilers are oak, birch, tamarac, pine and maple.

Coal is the most popular class of fuel, and although sub-divided into many groups we might state for boiler purposes, only three classes are in general use.

(a) Anthracite or hard coal.

This is a dense coal containing a low per-

centage of volatile matter with a very high percentage of carbon. It burns at a high temperature, and with a pale blue flame.

From a smoke inspector's point of view, it is an ideal fuel, for no objectionable smoke is evolved in the burning.

(b) Bituminous or soft coal.

This coal is easily broken, is very high in volatile matter; it ignites readily and burns with considerable flame. This class of coal is the least desirable to the smoke inspector, but when due precautions are observed in firing, and necessary smoke preventing equipment is provided for the boiler it possesses many advantages over some other classes of fuel. It is the best available fuel for use with some of the mechanical stokers hereinafter mentioned.

(c) Semi-bituminous coal, of which a good specimen is known as Pocahontas coal.

This class of coal is perhaps more readily broken than any other, it ignites readily and burns with a pale flame. It is very high in carbon, and exceptionally low in ash.

It is an ideal steam coal and possesses many advantages over bituminous coal. It is higher in carbon and lower in volatile matter and ash; and if due precautions are observed in firing very little smoke is evolved in the burning; it may be used with practically any type of boiler.

It is mined in several places on this Western Continent, but most extensively in the Pennsylvania Valley.

(d) Coke is an excellent fuel and is in fact the residue left after distillation off of gases from certain kinds of coal. It is not of great density and is in fact a lump of carbon. Its properties and value as a fuel will probably be dealt with in the April edition of the Departmental Bulletin.

In some countries oil is very largely used as fuel for boilers, but very slight progress has, up to the present time, been made along these lines in Canada.

There is a good opening for the introduction into this country for a burner that can be adapted for burning oil in connection with steam boilers. Suitable oil is available for fuel within easy rail distance of Winnipeg for boiler purposes, but owing either to lack of knowledge or lack of enterprise, or probably some undefined cause, oil as a fuel for boilers has not yet entered into competition with other fuels in this country.

Heat Units.

The value of any substance as a fuel is generally determined by the boiler engineer, according to the heat units contained therein.

A unit of heat has been defined as the amount of heat required to raise the temperature of one pound of water from 32 to 33 deg. Fht.

Another definition is the amount of heat required to raise the temperature of one pound of water from 62 to 63 deg. Fht.

A British Thermal Unit or B.T.U. means the amount of heat required to raise the temperature of one pound of water, one deg. Fah. It is on this basis that the value of coal is determined in Canada, either from the commercial value, or pure coal value basis.

Elements in Fuel.

The principal elements in all fuels of whatever composition are oxygen, hydrogen and carbon, these elements in correct combination form pure coal; pure coal, however, is never found at the mines, but in all fuels other elements are found that will not burn, and remain after combustion in the form of ash.

In the process known as combustion, the carbon and hydrogen burn; the oxygen does not burn, but is present in combination with the hydrogen and reduces the quantity available for combustion with the carbon. During the process of combustion one of two compounds is generally formed by the carbon in the fuel.

If combustion is complete the carbon in the coal will enter into chemical combination with the oxygen, each atom of carbon will take up two atoms of oxygen, and form carbon di-oxide or CO_2.

If, however, sufficient oxygen is not available each atom of carbon will only take up one atom of oxygen and form carbon monoxide or CO; combustion being incomplete.

It has been previously mentioned that in the process of combustion or rapid oxydation, light and heat are evolved.

The amount of heat so evolved is generally expressed in B.T.U. It has been found that when one pound of carbon has been

burnt to its dioxide, that is, perfect or complete combustion resulted, over 14,000 B. T. U. have been evolved in the process.

And that when owing to incomplete combustion one pound of carbon has been burned to form CO only 4,000 B.T.U.'s have been evolved, it will be seen that a loss of 10,000 B.T.U.'s have resulted or at least 71%.

It will be seen from the above statement that owing to incomplete combustion the financial loss to the owner of the boiler is enormous.

Other losses of heat must also be reckoned with, such as radiation, hot gases escaping from the chimney, waste of fuel, careless stoking, and others.

Incomplete combustion, however, is the most serious leakage to be considered, for 71% of the heat units in every pound of coal used is wasted from this source alone. Incomplete combustion is occasioned by lack of required oxygen or improper draughts, and consequently insufficient air to consume the volatile gases given off directly fresh fuel is placed on the fire, or owing to an insufficient supply of oxygen, the carbons burn only to CO, instead of CO_2.

The other losses referred to are inconsiderable when compared with imperfect combustion. The loss by radiation may be easily remedied by careful setting and coating of the boilers and steam pipes.

The loss by gases escaping by way of the chimney can not be considered as a total loss, for they are essential to produce draughts.

The amount of air entering the furnace depends on many conditions, such as the draught of the chimney, which is determined by its height, freedom from obstructions and outside temperature; and temperature of the chimney gases.

Having mentioned the causes of smoke nuisances and briefly shown the necessary chemical conditions to ensure complete combustion, I will now briefly refer to some of the appliances or equipment used in connection with boilers where bituminous fuel is used to aid in effecting complete combustion, and incidentally preventing smoke nuisances.

I must, however, refer once again to *methods of firing*, for these have a distinct bearing on smoke prevention apart from economy.

(a) The spreading system or throwing fresh fuel over the entire fire area at each act of firing.

(b) The alternate system, that is, the fuel is placed alternately on each side of the grate, or sides alternately with the centre.

(c) The coking system. This system really consists of the fresh coal being placed in the front of the fire on the dead plate, and allowed to remain there until many of the volatile gases are removed from the green coal.

After a short interval this fuel is pushed further back into the fire, and fresh coal again placed on the dead plate. This process continues until the fuel is pushed back to the bridge wall.

By this system of stoking, all gases evolved from the fuel must pass over the hot bed of coals, and coming into contact with the surplus air which is also at a high temperature, there is a reasonable probability that the gases will be burnt.

Which of the three methods of stoking is most to be recommended depends on the fuel used for the furnace.

The sprinkler system can be reasonably adopted where hard coal screenings, pea and nut size anthracite is used, and with Pocahontas, firing very lightly.

The alternate system can be used with advantage for mixed fuels and with coke.

The coking system is the best possible system for bituminous coal, and is in fact the only method that should be tolerated in hand firing with this class of fuel.

In all methods of stoking the fire should be kept bright and free from clinkers and dirt.

Smoke Preventing or Consuming Apparatus.

From the above heading it is manifest that two distinct principles are involved in dealing with smoke nuisance: (a) preventing; (b) consuming.

Many of the appliances in use may be termed either one or the other, and in some cases may be used as both preventers and consumers.

Time and space forbid giving anything approaching a full description of the many smoke consuming or smoke preventing appliances on the market; for an en-

tire paper could be devoted to almost any one of them.

In passing it may be mentioned that I have dealt with some of these appliances in the annual reports and through the Department Bulletin, I refer more particularly to:

(1) Steam jets;

(2) Hollow brick arches, alone and in use with steam jets;

(3) Kreig's patent smoke consuming apparatus;

(4) The Ben Haigh's fuel economizer and smoke preventer;

(5) Parson's smoke consuming apparatus.

Nearly all the above are smoke consumers and all possess qualities to be commended, and may be seen in operation in many places throughout the city.

(1) Steam jets at Swift Canadian Co., Elmwood; the Bird's Hill Sand Co., Arlington street; the Sheet Metal Products Co., Lombard street, and many other places also on numerous locomotive engines.

(2) The hollow brick arch on about 120 C.N.R. and 30 C.P.R. engines, alone and with steam jets, also at the T. Eaton Company, Limited, power house.

(3) Kreig's Consumers at the Street Railway Company's power house, Assiniboine avenue. This apparatus is applied to all their new boilers. The results are evidence of their efficiency. This apparatus is also in operation at the Mooney Biscuit Factory, Market street, and the Royal Crown Soap Works and other premises.

(4) The Ben Haigh's fuel economizer and smoke preventer is fitted at numerous places throughout the city and is a very popular device because it has many advantages over numerous other appliances.

It has been proved to be all it claims, a most generous fuel saver as well as smoke preventer.

It has the unique property of being adaptable to low pressure as well as high pressure boilers.

It may be seen in operation at The Bon Accord Block; the St. Regis Hotel; Paulin Chambers Biscuit Factory; the Nanton Block; Robinson's Department Store, and many other places. I hope soon to see it installed at the Fort Garry Hotel; the City Isolation Hospitals, and other places in the near future.

(5) Parson's smoke consuming equipment may be seen at the T. Eaton Company, Limited, power house.

This apparatus is very expensive and it is not possible apparently to burn soft coal alone with it in use, without the evolution of objectionable smoke.

Numerous other types of smoke consumers are in operation in the city which are more or less modifications of some or all of the above systems, but are not in my opinion, and judging from results as efficient as the genuine article.

These may be seen at the Eidelweiss Brewery, Elmwood; Canada Paint Co.; Vulcan Iron Works; Steel Block, Portage Avenue; Gordon, Ironsides & Fares, and other premises.

There are several other types of smoke consumers on the market, but as none of these are in operation in the city I will pass over them and touch lightly on

Mechanical Stoking.

Mechanical stokers, if properly designed and correctly manipulated, are smoke preventers.

There are numerous designs on the market, but I will only mention in this paper those in active operation in the city of Winnipeg.

(1) Jones under feed stokers.

This appliance has been fully described in one of the annual reports. I might briefly state, however, that the coal is placed in a hopper over a trough arrangement, along which it is propelled by a mechanical device; when underneath the fire, the fuel is pushed upwards through a long slot arrangement, into the fire from below, from whence it derives its appellation: Under feed stoker. By this means the gases are not permitted to escape and are consumed in passage through the hot fire.

These automatic stokers may be seen at the Royal Alexandra Hotel, Union Depot, City Waterworks, Grain Exchange Building; Gordon, Ironsides & Fares.

(2) Roney's Mechanical Stoker.

In this appliance the coal is placed in a hopper, from which it is forced to the dead plate, it is then jerked by a mechanical device from one grate to another on a downward plane, until it reaches the bridge

wall. The grates have the appearance of steps, at right angles to the length of the boilers.

The motion of the grate bar is derived from the rocking bar, and oscillates by the action of a connecting rod, controlled by an agitator.

The Roney Stoker is in operation at the new Street Railway plant at the end of Portage avenue east.

(3) Babcock & Wilcock's Stoker.

This is one of the best, and by many authorities considered the best apparatus for smoke prevention known to sanitary science. It is a mechanical appliance.

Coal is placed on a hopper, from which it is uniformly deposited on chain grates. These grates revolve very slowly carrying the fuel with them towards the bridge wall.

This type of stoker may be seen at the City Waterworks, McPhillipps street; the C. P. R. power house, near subway; the Great West building, and the C. P. R. roundhouse.

It is also intended to provide these appliances at the C. N. R. power house, Fort Rouge.

Perfect combustion is obtained.

Burkes Furnaces.

The Burkes Furnace or Dutch Oven as it is familiarly known, is largely in use in the city of Winnipeg. It is really a down draft furnace.

The fuel is placed in side hoppers from which the fire is fed from below; if this furnace is properly managed, no objectionable smoke is emitted from the chimney as all gases may be burned in passage through the hot mass of fire.

MONTHLY JOTTINGS

Owing to a misunderstanding the paper intended for publication in the May issue of the Journal was omitted. We were sorry to disappoint the members, and will endeavor to publish an article each month in future.

Several of our 1913 members have not yet renewed their membership, and as the Secretary has already written a personal letter to each, perhaps they will take the hint. While we are steadily gaining new members, we want to hold the old ones. Our Association was formed for the purpose of helping each other, and the more numerous we are the better we will accomplish that end.

The Executive Committee desire to remind the members of the annual meeting of the Association, to be held at Winnipeg on the 15th, 16th and 17th of July. These dates are included in Exhibition Week, when cheap railway fares may be had. An interesting and instructive programme has been arranged, and as it embraces visits of inspection to a model dairy farm, a modern bakery, ice cream and milk plants at a large creamery, sewage disposal works and other places of special interest to Sanitary Inspectors, it is desirable that we have a large attendance. We do not propose to burden the delegates with long papers on theory, but rather to indicate in a practical manner many up-to-date methods in the various branches of work we are called upon to perform. It would greatly help matters if members who expect to be present will write the Secretary at once.

Our Food

It is quite in keeping with the objects and functions of THE PUBLIC HEALTH JOURNAL that it should give the recognition of its columns to certain worthy food products, made by manufacturers whose watch-word is QUALITY. Accordingly, in this issue we present the first of a series by a special staff writer, who, after visiting the great manufacturies, and thoroughly investigating their procedure, will present his impressions. These articles are entirely complimentary on the part of the Journal.

QUALITY FIRST

THE WINNING AND HOLDING A GOOD NAME

By J. C. K.

Illustrated by James McHardy

Some years ago, when Capt. Bernier made an expedition to the Arctic regions, he specified that the biscuits required for the expedition should be supplied by a certain well-known firm.

It was not a mere matter of good-will, or of favoritism on the part of Capt. Bernier; rather was it a matter of vital necessity. On a previous expedition, Capt. Bernier had taken biscuits not made by Christie, Brown & Co., and they had gone mouldy and had to be thrown away. Since health, perhaps life, and perhaps success might depend, as often they have depended, on food supply, Capt. Bernier was exercising a proper prudence when he took with him biscuits which he knew from former experiences could be counted on to keep good for years—he had cached Christie's biscuits, and when, long afterwards, the cache was opened, the biscuits were discovered to be as sweet and wholesome as the day when they were stored.

Another significant tribute to the superiority of these biscuits is the fact that in the exhibits assembled by the Canadian Government for showing at the great international expositions of Europe and America they have always been included as being one of the choicest Canadian products.

II.

One asks: Why are one maker's biscuits better than another's? And why are Christie's regarded by the public at large

as representing the perfection of biscuit making? To obtain answers to these questions I interviewed, for the Public Health Journal, the principals of Messrs. Christie, Brown & Co., and made a journey through their factory—a favor, by the way, not generally granted, for there are secrets to guard—methods and machines which are peculiarly their own.

III.

It is not my intention to dwell on manufacturing processes, to tell of machines, to give pictures of the white-robed workers at their multifarious tasks, to lead you from room to room, from floor to floor, in order that you may comprehend the variety and

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complexity of the operations necessary to produce the more than four hundred varieties of biscuits. This were too long a story to tell here. Yet I desire to speak some things which play their part in achieving the high quality which distinguishes the biscuits marked with the name "Christie," and which account for these biscuits being good, better and best.

Let me speak briefly of the baking. Everyone knows that biscuits may be over or under-baked, and that perfect baking is a fine art. Perfect results in baking depend on thorough mixing, a properly heated oven and a carefully calculated time in the oven. There are, of course, other considerations; you must have, for one thing, a supervising baker of masterly skill and long experience.

Over-baking means burning—the destruction of the "life" of the biscuit. Under-baking means a more or less raw biscuit, with a tendency to grow sour, a biscuit at once unpalatable and indigestible. The fault—at least one fault—of the biscuits which went mouldy in the Arctic expedition previously referred to, was that they had not been thoroughly baked.

The baking of biscuits in a modern biscuit factory has been reduced to a science, and is largely a mechanical process. Yet the human factor—the knowledge and care of expert bakers can never be eliminated. The biscuits are carried by machinery into gas-heated ovens of peculiar construction. Some are cavern-like in their capacity. Others resemble long boxes into which is fed at one end, by means of a chain mechanism, a constant supply of doughy conceits, and from which, at the other end, issues a ceaseless succession of toothsome goodies, whose sight and smell make the mouth water and tempt the visitor almost beyond the power of resistance. These box-like ovens are heated to a set temperature, and the time of the journey of the biscuits through them is carefully regulated. When the biscuits emerge from the ovens, they are perfectly baked.

IV.

But perfect baking cannot correct inherent defects in the raw materials. Biscuits made from lard which is a compound may be thoroughly well baked, yet go bad—turn rancid—if placed in certain temperatures and allowed to remain there for some time. Even the best biscuits will lose something of their delicacy, crispness and freshness in over-heated or over-moist atmospheres.

In this factory there is a devotion to purity, quality and cleanliness, which amounts almost to an obsession. Principals, managers and department heads demand perfection in all things. Butter that is faultless in the judgment of a layman may be rejected. Fruits that seem to

leave nothing to be desired may not be good enough for use. Quality, Quality, Quality—this is the reiterated word from one year's end to another.

In more than one room I saw girls at work going over, scoopful by scoopful, great barrels of sultana raisins—fruit so clean and choice to my eyes that it seemed but wasted time to try and make it cleaner. But stones—little pebbles—are to be looked for, so every ounce of the fruit is scanned by trained eyes to discover and remove them and anything else detrimental. Currants are thoroughly washed in running water and brushed to remove stems and alien particles, although they are the finest currants which Greece exports. The crystallized cherries used in cherry cake and as edible decorations for certain varie-

ties of fancy biscuits are remarkable for their delicious plumpness. Nothing finer can be procured. The butter used is the finest creamery, the lard is pure and sweet smelling, refined and doubly refined. No compounds, with their tendency to rancidness, are permitted to enter the factory or finally the products. So one might go on emphasizing the choiceness and superior quality of every raw ingredient used.

Not every maker of biscuits professes to make biscuits of the highest quality. The price factor governs quality with many. Competition, the demands of shareholders for fat dividends and the apathy or ignorance of the consuming public combine to cause some manufacturers of biscuits to sacrifice the ideal.

V.

The consideration of cost is made subordinate to the quality standard which this great firm set for themselves at the beginning of their history, and which they have maintained ever since. For example, they will not use anything but an absolutely pure chocolate of the finest quality in the making of those biscuits into which chocolate enters. The significance of this is perceived when it is stated that pure chocolate does not keep its color when baked, but has a tendency to bleach—to become blotchy or mottled, distinctly unpleasing to the eye, but not to the taste. The great majority of manufacturers use a chocolate which has been colored by the admixture of a certain clay which comes from Germany. Other colorings which may be harmless enough will not stand "firing"; clay is the only satisfactory coloring. The presence of clay may not be detected easily by the average individual, but it surely requires no argument to convince intelligent beings that clay is not a substance that should be taken into the human stomach. An uninformed public sees nothing wrong in chocolate biscuits of fine color; and it may be that many physicians, nurses and food reformers have lacked knowledge concerning this phase of chocolate adulteration. But with the facts known, they and grocers who sell, and the public which consumes, should set their faces against a harmful compound, and give their favor to chocolate biscuits which are above suspicion.

This recitiude of purpose shown by the makers of Christie's biscuits—a rectitude which sometimes causes them to lose sales—may appear to some to be a little old-fashioned, but it is one of the glories of Christie, Brown & Co. that the ideal of the founder of the business is maintained by the present administration undimmed and unsullied.

Not the least pleasing remembrance of my journey through this factory is the recollection of the laundry. I had not looked for this sanitary feature. At first blush, it seemed out of place in the business of making biscuits; but second thoughts caused me to see the reasonableness and propriety—even necessity. The

making of food products ought to be attended by every care. Hygienic conditions—the supply of light and air, proper ventilation and sanitary aids—are a sine qua non of all modern factories. Most of all are they imperative in factories engaged in the making of the food we eat.

In this factory every employee is supplied daily with a fresh handkerchief and towel, while fresh white outer clothing—dresses, coats and aprons—are supplied at least twice a week, and more frequently if needed. The laundry is equipped like any commercial laundry—with huge washing machines, giant mangles, and drying chambers, through which is passed purified air.

For many years their staff has been given free medical service. If an em-

ployee falls sick and is ordered to the hospital, the expense is borne by the company, and the patient is cared for most generously. In the factory is a surgical room, where first aid cases are attended to by physicians, who are specially retained to give the needed attention. Doctors visit the factory regularly to supervise the health of the staff, and did so during many years before any regulations made by law governed the health of employees of factories where food is prepared.

The spirit of the management with respect to the comfort and well-being of its employees is further expressed in the provision for them of rest rooms and shower baths. One rejoices to see, in this day of multiplied time-clocks, that men and women workers are not everywhere regarded as mere "hands," but as creatures with minds and souls and bodies and capable of a higher and better service than the humdrum discharge of their daily task.

In the new edition to the factory facing on King street have been incorporated improvements of a structural character designed to contribute to hygienic and sanitary perfection—enamelled brick walls, for example, and the use of cement for wood. Always the aim is to devise machinery which will reduce the amount of manual contact with the products of the factory; yet in many of the finer and more delicate operations it would seem impossible to the untutored observer that any machine could altogether replace the human hand in the doing of its deft work.

PRIMITIVE

It is to tutored hands and brains that Christie, Brown & Co, have looked for past successes, and will continue to look for future efficiency.

PERFEC ' ( )

ALCOHOL AND THE PUBLIC HEALTH

"Could alcohol in all its forms be abolished from the community it could almost be guaranteed that the death-rate would fall 1 per 1,000 per annum at least. That the state of matters at present existent in this and other similar communities has been allowed to survive so long is a cause of wonder to anyone who is conversant with the facts to any small extent and reflects on them. The time of legislators is occupied in trimming the outgrowths of social evil, which have risen largely from this root, but the root itself manages to get left alone or, at the best, simply restricted and regulated. No municipalization, no disinterested management, will prevent people getting drink —and taking it home or elsewhere—as long as it is on sale anywhere. Would the absolute and sudden withdrawal of it from the community or country do anyone any harm? As a medical man, I know of no condition affecting bodily health which would be prejudiced by such a measure. What a different appearance our town has on a holiday when all the drink shops are closed by recommendation of the magistrates to what it presents on holidays when these are open. There is seldom a holiday time in which I do not see a death either from accident or otherwise which has been directly due to alcohol, but these deaths do not appear in our returns as due to alcohol—very few do. Not only are there direct deaths; we cannot compute with any accuracy the numbers of children who are starved and neglected and have their bodies reduced, so that they cannot resist disease when it comes, because their fathers and their mothers spend their means on drink. The lot of the laboring man is a hard one, and it is said he finds a solace in drink to be found in no other way; it is for him a sort of chloroform from misery and hopelessness. He soaks in it at every opportunity, reduces the powers of resistance of his body to disease and succumbs to pneumonia, bronchitis or consumption, more readily than sober men. Most towns like ours have hundreds of such men, many of whom make as much as 7s. per day in ordinary good times, and are paid daily and drink nightly. Many of them live away from their families for the sake of this freedom for self-indulgence, while the families may be a charge on the rates of some distant parish. When these men take ill the usual thing is the parish doctor and the parish hospital and poor-house, at the public expense; the good wages have gone nightly into whiskey. Our police force exists largely to regulate the disorder, recklessness and crime caused by alcohol. Of the total number of arrests in 1912, which numbered 1,531, as many as 1,346 were due to alcohol; 660 being drunk and incapable and 686 for breaches of the peace. If we take the alcoholic arrest rate to stand in much the same proportion to the actual number of people drinking as the number of people dying, does to the number of people who have been sick from some cause or other, the analogy will not be unfair. Probably less than 1 per cent. of the people who have been sick die during any one year, and if we take the number of persons arrested as representing only 1 per cent. of the people drinking, we get the figure 134,600, or three times the population, as representing the number of people who have been drinking alcohol more or less during the year. The moral looseness, the family misery and deprivation, the reckless misuse of property and causation of nuisance, the loss of work involved in this figure, are incalculable. The loss by fines and forfeited pledges alone was nearly £500, but this is a small amount of the total waste. On the other hand, there is indisputable evidence given us by the life insurance companies, which keep separate records for total abstainers, that they live many years longer than even the moderate drinkers, their conditions of life being otherwise similar. With these reflections we welcome the evidence that public opinion is slowly but surely coming to the conclusion that drastic powers must be placed in the community's own hands, and there is little doubt that when the people wake up to the facts they will soon rid themselves of this canker."—Dr. Strang, in "The Medical Health Officer."

Phagocytosis.

Its stimulation in relation to Tuberculosis.

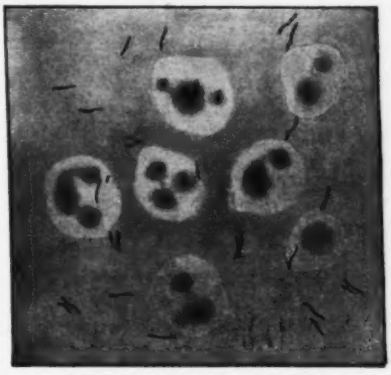
Convincing Evidence

TABLE OF RESULTS.

Duration of feeding with VIROL.	Average number of germs absorbed in 15 minutes by each Leucocyte.
0 weeks	1·1
2 "	1·3
6 "	1·5
9 "	3·8
12 "	4·5

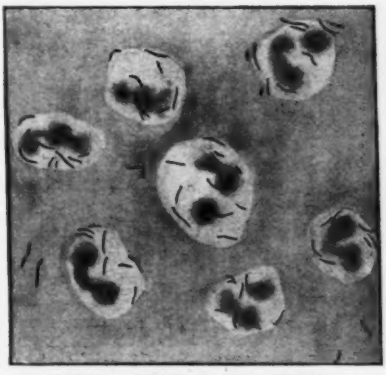
An elaborate series of investigations recently conducted at a well-known sanatorium has definitely proved that the addition of Virol to the diet exercises a remarkable influence on the phagocytic action of the leucocytes. The experiments showed there was a distinct and progressive increase in the functional activity of the white cells in proportion to the number of weeks the patient had been fed on Virol.

Proof from actual micro-photographs



BEFORE FEEDING ON VIROL.

From an actual Micro-photograph illustrating the deficient average Opsonic power of the Blood of a number of patients suffering from the debilitating effects of acute infections, before treatment with Virol. The average number of Bacilli ingested by each Polynuclear Leucocyte in fifteen minutes was 1·1, the Opsonic Index being 0·41.



AFTER FEEDING ON VIROL.

From an actual Micro-photograph illustrating the increased Opsonic power of the Blood of a patient after twelve weeks' treatment with Virol. The average number of Bacilli ingested by each Polynuclear Leucocyte in fifteen minutes was 4·5, the Opsonic Index being 1·5. Contrast this with the deficient average Opsonic power of the Blood of children of similar age not treated with Virol. (See opposite Micro-photograph.)

VIROL

Used in more than a thousand Hospitals and Sanatoria

E.E.D.

VIROL LIMITED AGENCY, 27, St. Peter's Street, Montreal.

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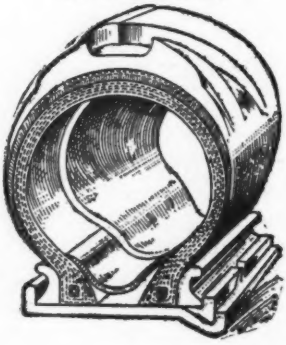
LARGER AND DEEPER PROJECTIONS

The safety-assuring portion of a tire is the tread. Compare Dunlop Traction Tread with all other makes of tires, and note the difference in the larger and deeper projections. That should prove clearly to you that to have (real traction qualities in a tire) is to hold (the car safely.)

Dunlop Traction Tread
Straight Side
Our Patented Tire

66 inches larger



Never did rim-cut

Most Envied Tire in all America

T-72

THE BEST CURE

is often to get out on the land. **ONTARIO LANDS** *offer both prosperity and health to those who desire to take advantage of the opportunities afforded. In old Ontario there are fruit lands, vegetable lands and mixed farming lands available at reasonable prices which offer prospect of advancement in value within the next few years in addition to the value of the annual returns. They also include many of the conveniences of modern life, as well as the beauties of nature.*

In New Ontario there are lands available in some places for nothing and in others at a nominal price of fifty cents per acre, which are capable of producing almost all kinds of crops, and which constitute one of the best chances at the present time for the settler who desires to take up cheap lands.

Further information will be supplied on application to

HON. J. S. DUFF,
Minister of Agriculture,
Parliament Buildings,
TORONTO.

H. A. MACDONELL,
Director of Colonization,
Parliament Buildings,
TORONTO.

The following circular is Printed on a card and will be sent to those making application for same:

HOW TO DEAL WITH THE FLY NUISANCE

House flies are now recognized as MOST SERIOUS CARRIERS OF THE GERMS OF CERTAIN DISEASES such as typhoid fever, tuberculosis, infantile diarrhœa, etc.

They infect themselves in filth and decaying substances, and by carrying the germs on their legs and bodies they pollute food, especially milk, with the germs of these and other diseases and of decay.

NO FLY IS FREE FROM GERMS

THE BEST METHOD IS TO PREVENT THEIR BREEDING

House flies breed in decaying or decomposing vegetable and animal matter and excrement. THEY BREED CHIEFLY IN STABLE REFUSE. In cities this should be stored in dark fly-proof chambers or receptacles, and it should be REGULARLY REMOVED WITHIN SIX DAYS in the summer. Farm-yard manure should be regularly removed within the same time and either spread on the fields or stored at a distance of not less than quarter of a mile, the further the better, from a house or dwelling.

House flies breed in such decaying and fermenting matter as kitchen refuse and garbage. Garbage receptacles should be kept tightly covred.

ALL SUCH REFUSE SHOULD BE BURNT OR BURIED within a few days, BUT AT ONCE IF POSSIBLE. NO REFUSE SHOULD BE LEFT EXPOSED. If it cannot be disposed of at once it should be sprinkled with chloride of lime.

FLIES IN HOUSES.

Windows and doors should be properly screened, especially those of the dining-room and kitchen. Milk and other food should be screened in the summer by covering it with muslin; fruit should be covered also.

Where they are used, especially in public places as hotels, etc., spittoons should be kept clean as there is very great danger of flies carrying the germs of consumption from unclean spittoons.

Flies should not be allowed to have access to the sick room, especially in the case of infectious disease.

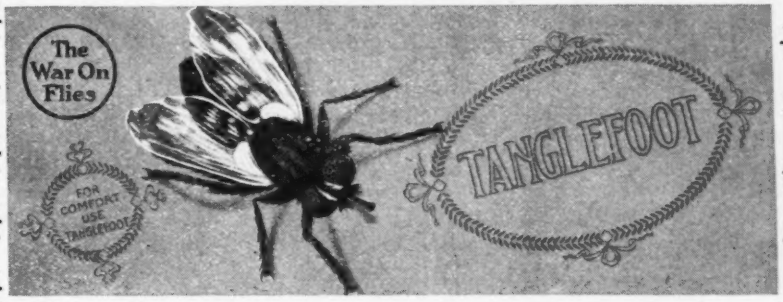
The faces of babies should be carefully screened with muslin.

FLIES MAY BE KILLED by means of a weak solution of formalin (40 per cent.) exposed in saucers in the rooms. This is made by adding a teaspoonful of formalin to a pint of water. The burning of pyrethrum in a room is also effective.

House flies indicate the presence of filth in the neighborhood or insanitary conditions.

ENTOMOLGICAL DIVISION, CENTRAL EXPERIMENTAL FARM, OTTAWA
DEPARTMENT OF AGRICULTURE, CANADA.

(Published by direction of the Minister of Agriculture.)



Fight Flies with Tanglefoot!

For 30 years Tanglefoot has been America's surest, safest, most sanitary fly-destroyer. It is non-poisonous, easy to use, and costs but a trifle. Each sheet is capable of killing 1,000 flies. And Tanglefoot not only kills the fly, but seals it over with a varnish that *destroys the germs* as well. In buying, ask for the genuine "TANGLEFOOT" —it costs you no more and lasts twice as long as the no-name kinds sold merely as fly-paper, or sticky fly-paper.

Made only by The O. & W. Thum Co., Grand Rapids, Mich.

Gasoline will quickly remove Tanglefoot from clothes or furniture. (33)

How to Use

Open *Tanglefoot* slowly. In cool weather warm slightly. For best results place *Tanglefoot* on a chair near window at night. Lower all shades, leaving one at the *Tanglefoot* window raised about a foot. The early morning light attracts the flies to the *Tanglefoot*, where they are caught.

THE ONLY FACTORY OF ITS KIND IN CANADA

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Trusses, Elastic Stockings, Suspensories, Shoulder Braces, Supporters, Chamois Vests, Crutches, Splints, Rubber Sundries

The Ottawa Truss & Surgical M'f'g Co., Limited,

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TRUE TO ITS NAME — DUSTBANE MFG. CO. LTD. — THE DUST KILLER — OTTAWA, ONTARIO.

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NO DUST WHILE YOU SWEEP.

Why Breath Dust and Germs?

Packed in Bbls., ½ Bbls., ¼ Bbls. for Stores, Schools, and Public Bldgs. Household pkgs. at your grocer's.

Dustbane Mfg. Co., Ltd.

Ottawa - Ontario

A Doctor's Widow Writes—

R. H. Carney, Esq., Thessalon, Ont., Jan. 30th, 1914.
District Manager,
Sault Ste. Marie, Ont.

Dear Sir,—

Please accept my thanks for the very prompt and satisfactory settlement of my claim against your Company in connection with the accident policy on the life of my late husband. The original amount of the policy was for $1,000.00, which together with bonus additions makes a total of $1,250.00. Your Company is the first to settle, and I appreciate the satisfactory manner in which both yourself and your Company transact business.

Thanking you for your courtesy and kind attention, I remain,

Yours very truly,

(SGD.) JULIA MAUDE SPENCE.

Doctor Spence was accidentally poisoned on January 19th.

THE BROADEST ACCIDENT AND SICKNESS POLICIES
ARE SOLD BY

The General Accident Assurance Co. of Canada
The Canadian Casualty and Boiler Insurance Co.

Head Office : Continental Life Bldg., Toronto

JOHN J. DURANCE, Manager

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The Colleges provide instruction in the Classical, Modern and Semtic Languages and Literature, Ancient History and Ethics. The University gives training in the remaining subjects of the curriculum.

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Courses in Civil, Mining, Mechanical, Electrical and Chemical Engineering; Architecture and Applied Chemistry leading to the Degree of B.A.Sc.

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Courses for normal and occasional students.

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Professional training for Public School, High School and Inspector's certificates.

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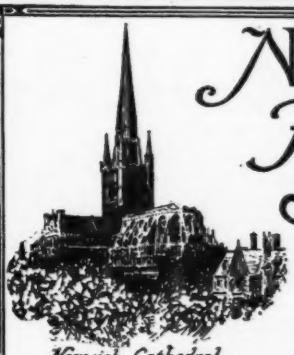
The affiliated Colleges and Schools train candidates for University standing in Dentistry, Pharmacy, Agriculture, Music, and Vetinary Science.

For information apply to the Registrar of the University, or to the Secretaries of the respective Faculties, Toronto, Ont.



Norwich Cathedral.

NORWICH UNION FIRE INSURANCE SOCIETY LIMITED

Norwich, England

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EMPLOYERS LIABILITY

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Agents wanted for the Accident Branch

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12 Million Policies,
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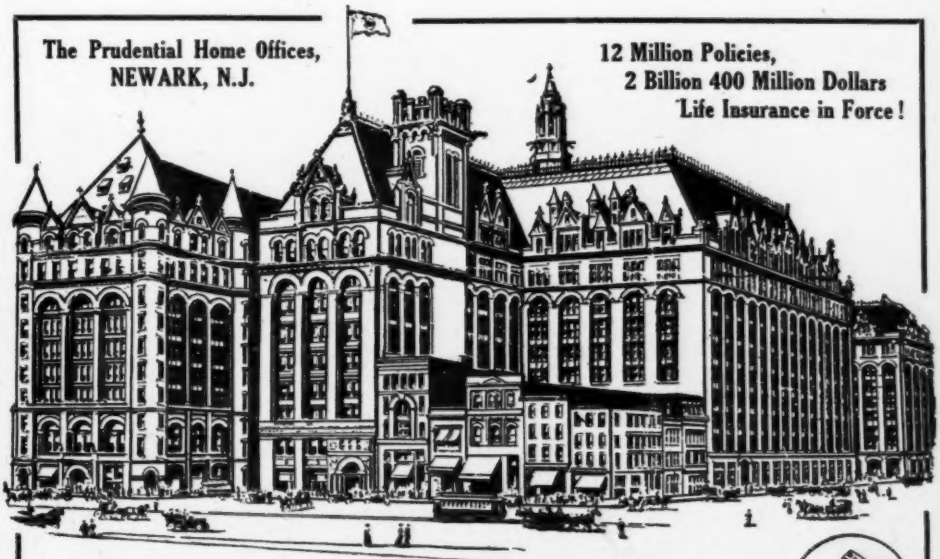

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Founded by JOHN F. DRYDEN, Pioneer of Industrial Insurance in America

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Write for Particulars of Policies

Instantaneous Hot Water for Bath Room Kitchen or Laundry Purposes

The Beler Automatic Gas Water Heater supplies hot water instantly at the turn of a faucet in any part of the house.
There is no waiting, no lighting of matches. You simply turn the faucet and the hot water is there. Close it and the gas goes out, and the expense for fuel ceases.
The Beler Automatic Water Heater is the greatest convenience that can be put in your home, and you will wonder how you ever got along without it.

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Read Gas News—It's Worth While

WISCONSIN.

O! a truly sovereign state
Is Winconsin!
All that's good and wise and great
Is Winconsin.
Every day or two I read
How her laws and customs lead,
Heaven must be like, indeed,
To Wisconsin.

Education is the rage
In Wisconsin.
People all are smart and sage
In Wisconsin.
Every newsboy that you see
Has a 'varsity degree,
Every cook's a Ph.D.,
In Wisconsin.

Trusts and bosses never mix
In Wisconsin.
O! the lovely politics
In Wisconsin!
Though the railroads boost the rate
High in every other state,
They are famously sedate
In Wisconsin.

Matrimony cannot fail
In Wisconsin.
Babies all are strong and hale
In Wisconsin.
That's the state of married bliss
You have read about ere this,
None but gods may coo and kiss
In Wisconsin.

People never lock their doors
In Wisconsin.
No one hardly ever snores
In Wisconsin.
Ivy drapes each prison wall
And the jails no more appall—
They are social centers all
In Wisconsin.

O! the state of states for me
Is Wisconsin!
There's the place where I would be,
In Wisconsin.
I would hasten to her shore
With a glad and grateful roar,
Only Jersey needs me more
Than Wisconsin.

—L. H. Robbins.

THE ROYAL BANK
OF CANADA

Capital Authorized - -	$25,000,000
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SUN LIFE ASSURANCE COMPANY OF CANADA

YOUR HEALTH IS GOOD

to-day, perhaps, but that is no guarantee that it will be good *to-morrow.*

You may be able to get life assurance *to-day.* *To-morrow*—who knows?

Life Assurance creates *immediately,* for the benefit of your family in the event of your death, an estate that it would take long years to accomplish by other means.

Death Not Necessary

It is not necessary to die to "win" under an Insurance Policy. Last year this Company

PAID LIVING POLICYHOLDERS

$957,189.64

A Policy in the Manufacturers Life is efficient in life as well as in death.

SPECIAL TERMS TO TOTAL ABSTAINERS

Write for booklet "Total Abstainers vs. Moderate Drinkers". It will interest you.

THE MANUFACTURERS LIFE

Insurance Company

Head Office: King and Yonge Sts., Toronto

FASHION NOTE.

The black silk slip-cover that comes with a gift umbrella is rarely utilized for its original purpose. But the deft fingers of a handy housewife may easily transform it, at slight trouble and expense, into a fashionable skirt. No refitting or reshaping necessary. Simply turn the affair upside down, cut off the metal end, and attach a belt. See that the slash comes at the side.

The Changing Seasons.

J. C.—What a fool a fellow can be on a summer's night when the moon is bright.

The Hallmarks of Station.

Roly—Is yours a select neighborhood?

Poly—I should say it was! On one block we've six limousines, four Pekinese pups and one baby carriage.—Judge.

Drug Clerk—Did you kill any moths with those moth balls I gave you?

Disconsolate Customer—No, I tried for five hours, but I couldn't hit a one.—Jester.

When a modern girl says she has nothing to wear it is only a slight exaggeration.—Springfield Union.

"Do any of the good things you hope for come to pass?"

"They all come to pass, but they come and pass so bloomin' swift I can't grab 'em."—The Saturday Journal.

Smith—How old is this Dr. Brown?

Jones—Why, I'm not sure. What does his card say?

Smith—Just "Dr. Brown."

Jones—Oh, he must be quite old. If he were a young doctor it would say, "Dr. Brown, Physician and Surgeon."

'16—Do you believe in infant damnation, Professor?

Married Prof.—Only at night.—Penn. Punch Bowl.

"Pa, what is scientific salesmanship?"

"Selling a dress suit to a man who went into the store to buy a celluloid collar."—Detroit Free Press.

THREE REASONS IN THREE WORDS

HOME

When this word is mentioned a plea is set up for life insurance, because in the event of death a Mutual Life policy will keep the home intact.

WIFE

To manage the house and at the same time provide for the support of the household is an appalling task. A Mutual Life policy will protect the widowed wife from this bitter necessity.

CHILD

Health, freedom, a good education, and even a good character may depend upon the child being shielded fr om poverty by a Mutual Life policy.

The Mutual Life Assurance Company of Canada
Waterloo - Ontario

Protect YOUR FAMILY while it is Dependent upon You!

Protect YOURSELF against Dependence on your Family, in your OLD AGE!

HOW?

By securing a "SPECIAL FAMILY POLICY" in

THE NATIONAL LIFE
ASSURANCE COMPANY OF CANADA

For particulars, write direct to
Head Office - - - National Life Chambers, Toronto

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SEVERAL GOOD OPENINGS FOR PRODUCERS

THE

HOME BANK OF CANADA

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British and Foreign Correspondents in all the principal cities of the world.

Letters of Credit issued enabling Canadians travelling abroad to have ready access to funds in any foreign city.

Seasoned Securities

This Corporation was established in 1855, and for fifty-nine years has been steadily growing in strength and in the confidence of the depositing and investing public. In that long period there have been "hard times" as well as seasons of prosperity, but the monies entrusted to our keeping have always been ready when called for.

The Corporation's bonds are, therefore, a "seasoned security." They are issued in accordance with the restrictive provisions of the Corporation's Charter, and also those with which the Legislature circumscribes the investment of Trust Funds. Ten and one-quarter Million Dollars of Shareholders' Money are a further pledge of their security.

These Bonds may be had in sums of One Hundred Dollars and upwards.

We shall be glad to have you call and inquire as to the terms upon which they are issued, or to send you a copy of our Annual Report and all particulars.

Canada Permanent Mortgage Corporation

Paid-up Capital and Reserve Fund exceed TEN MILLION DOLLARS

TORONTO STREET - - TORONTO

ESTABLISHED 1855

COINING WORDS.

The esteemed Weather Bureau has sprung a new one. It is the word "smog," and it means smoke and fog. The bureau explains that very frequently there are times when this fixture is apparent in the atmosphere, and it considers the new word a great little idea.

Very well, "smog" let it be. But why end there? Let's call a mixture of snow and mud "smud." A mixture of snow and soot "snoot," and a mixture of snow and hail "snail." Thus we might have a weather forecast:

"Snail to-day, turning to snoot to-night; to-morrow smoggy with smud."—Kokomo Times.

AN UNFINISHED SUBJECT.

In L'Esprit des Francais is an instance of the sharp, biting wit for which Alexis Piron, the French epigrammist, was famous.

A young author whose ability was by no means equal to his conceit was discoursing at length upon the merits of his work.

"I am tired of writing of that which others write of," he said. "I want to create an original work, something that no one has ever written about or ever will write about."

Piron turned quickly to the speaker. "Why not write your own eulogy?" he said.—Youth's Companion.

HYPOCHONDRIASIS.

"Good morning, Mrs. McCarthy!" said Mrs. Ryan, as the friends met at the market. "How's all the folks getting along?"

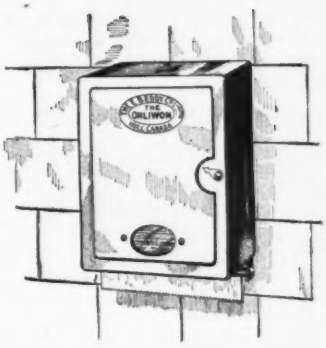
"They all be doin' well," replied Mrs. McCarty, "except my old man. He's been enjoyin' poor health for some toime, but this mornin' he complained of feelin' better."—The Youth's Companion.

PENALTY OF DISTINCTION.

"I represent the dignity of labor," said the man in his shirt-sleeves.

"Yes," replied Mr. Dustin Stax; "and you can work in your shirt-sleeves and speak your mind, and quit work when your regular hours are through. I've got to wear a high hat and guard every word I speak, and keep busy sixteen hours a day. I represent the labor of dignity."—Washington Star.

—and you get this splendid cabinet FREE



Finished in beautiful nickel plate.

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Simply buy your regular supply of Toilet Paper from us, and one Cabinet —to introduce— will be given absolutely without cost.

To architects, builders, building superintendents, hospital superintendents and hotel proprietors—we are ready to supply any number of "Onliwon" Cabinets—FREE—on the same basis as we offer to the ordinary householder.

Write now for prices of paper and full particulars

The E. B. Eddy Co., Limited

Established 1851

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Branches and Agencies in 25 Canadian Cities

"GOOD AS GOLD"

ARE THE

POLICIES

OF THE

London Life

Insurance Company

Head Office: LONDON, CANADA

Maturing 20-Year Endowment in the ordinary Branch show returns of $140 per $100 paid in premiums.

Full Insurance Protection in addition.

Ask for samples of Actual Results.

THE CENTRAL CANADA LOAN AND SAVINGS CO.

26 King St. East, Toronto.

Total Assets	$9,917,000.
Capital (sub.)	$2,500,000.
Capital (paid up)	$1,750,000.
Reserve Fund	$1,750,000.

Deposits received and debentures issued.

President
E. R. Wood

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Vice-President
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STATISTICS.

Of the gathering of statistics there is no end, but of the making of these statistics interesting, there is hardly a beginning. Ignorance reigns, not because there isn't plenty of information available, but because this information is compiled and stated in such an unintelligent and uninteresting form that the average person, even if he had the time, has neither the skill nor the imagination to decipher and vitalize it. Why can't statistics upon important topics be made as interesting as statistics about baseball, as to which so many of our office boys are walking encyclopedias?

Someone has said that words were invented to conceal thought. Statistics seem to have been invented to conceal facts.

A NEW PRIVATE HOSPITAL

FOR THE TREATMENT AND CARE OF ALCOHOLISM

and those addicted to Drug Habits, has been established at 622 Spadina Avenue, Toronto.

Correspondence Invited.

J. BRYCE McMURRICH, M.D.C.M., Medical Supt. Phone College 186.

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Insurance Company

HEAD OFFICE - TORONTO

"BROAD AS THE CONTINENT, STRONG AS THE EMPIRE."

¶ In this age of strenuous competition and rush for business the only safety for the business man lies in a

GOOD LIFE INSURANCE POLICY

¶ The POLICIES of the CONTINENTAL LIFE are liberal and unrestricted, and carry the highest guaranteed Cash and Loan Values, Paid-up and Extended Assurance Options.

For Particulars write to the HEAD OFFICE or any of the Company's Agents.

GEORGE B. WOODS, President and Managing-Director.

CHARLES H. FULLER, Secretary and Actuary.

A MONTHLY INCOME POLICY

IN THE

DOMINION LIFE ASSURANCE COMPANY

will continue your wages after death.

INDEPENDENCE FOR LIFE

Purchased by easy instalments, can be obtained for your wife and family. For particulars, write to

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ESTABLISHED 1875

Imperial Bank of Canada

HEAD OFFICE - TORONTO

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INTEREST ALLOWED ON DEPOSITS AT BEST CURRENT RATES

Hearts of Oak

IT takes decades to bring the oak from the acorn; but the oak breasts any gale that blows.

For nearly a third of a century the North American Life has driven its roots deep into the bed-rock of financial stability.

To-day its financial position is impregnable.

It is heart-of-oak.

Every North American Life Policy is backed by Thirteen and One Quarter Million Dollars of Assets and by three decades of upright business practice.

The North American Life is a *safe* Company in which to insure.

North American Life Assurance Company

"SOLID AS THE CONTINENT"

Head Office - Toronto, Canada

SIX FACTS *from the 67th ANNUAL REPORT of* THE CANADA LIFE ASSURANCE COMPANY

In important respects the Company in 1913 excelled its record for any previous year in its history.

1. THE SURPLUS EARNED in 1913 was $1,709,959.66, exceeding by over $179,000 the earnings of 1912, and by a much larger amount the earnings of any previous year. The present net surplus is $6,183,278.39.

2. THE INCOME of $8,094,885.70 was greater than that of the previous year by $698,125.96, and the greatest in the Company's history. The rate of interest earned, which had been steadily advancing since 1899, was further improved in 1913. This is an important factor in producing surplus.

3. THE ASSETS were increased by $3,860,271.32, and now stand at $52,161,794.81.

4. THE TOTAL ASSURANCES now in force are for $153,121,363.94, an increase of over $8,273,000 in the year.

5. THE PAYMENTS TO POLICYHOLDERS in 1913 totalled $2,878.016,11, an increase of $415,051.31 over those of 1912. In addition to this, LOANS TO POLICYHOLDERS on security of their policy contracts were made for $1,692,248.71.

6. THE MORTALITY of the year was again more favorable than the expectation, and this, with a continued LOW EXPENSE RATIO, contributed to the earning of a record surplus.

THE CANADIAN BANK OF COMMERCE

ESTABLISHED 1867.

Sir Edmund Walker, C.V.O., LL.D., D.C.L., President
Alexander Laird, General Manager. John Aird, Assistant General Manager

Paid-up Captial $15,000,000 - Rest $13,500,000

HEAD OFFICE, TORONTO.

London, England: 2 Lombard Street, E.C. New York: 16 Exchange Place.
Mexico City: Avenida San Francisco, No. 50. St. John's, Nfld.

In addition to the offices named above, the Bank has branches in every province of Canada and is therefore particularly well equipped for the handling of collections and the transaction of every description of banking business.

Drafts and Money Orders on all the principal countries of the world issued by every branch of the Bank.

Travellers' Cheques are a most convenient form in which to carry money when travelling. They can be used either at home or abroad and the exact amount payable in foreign money is printed on the face of each cheque. The cheques are issued in denominations of $10, $20, $50, $100 and $200, and are obtainable at any branch of the Bank.

Letters of Credit issued negotiable in all parts of the world.

The Metropolitan Life Insurance Co

wrote more Ordinary insurance in the United States and Canada in 1913 than any other company. The amount was $230,563,693, which was all the law permitted it to write. In Canada the amount of Ordinary written was $18,275,895.

It furnishes Industrial life insurance to wage earners substantially at cost. It has in Canada almost 700,000 Industrial policies outstanding, which are held by workingmen.

In an attempt to lessen the death rate it has established a free nursing service, and in 1913 Metropolitan nurses made more than 1,127,000 visits to 175,757 sick Industrial policyholders, free of charge.

The Company has distributed millions of pamphlets giving valuable hints on the improvement of health conditions and the prevention of disease.

It has on deposit, with the Dominion Government and trustees, for the protection of Canadian policyholders, nearly sixteen-and-a-half million dollars of securities.

It paid in 1913, 167,017 policy claims, amounting to $27,801,848.12.

Assets - - -	**$447,829,229.16**
Capital and Surplus -	**35,584,901.65**
Liabilities - - -	**412,244,327.51**

(According to the report for 1913 filed with the New York State Department.)

Metropolitan Life Insurance Co.

1 Madison Avenue **New York City**

Bulgarian Bacillus Mulford

(Pure living cultures of the Bulgarian Lactic Acid Bacillus)

For the treatment of intestinal fermentation, toxemia, controlling intestinal putrefaction and preventing absorption of toxic material from the intestines, and, according to Metchnikoff, preventing the tissue changes incident to senility, and for local infections. In prescribing Bulgarian Bacillus

Three points are essential:

1. Specifying the true Bulgarian Bacillus.
2. The culture must be free from other living bacteria.
3. The culture must be alive and active.

To Secure these 3 Essentials Specify Bulgarian Bacillus Mulford

This product is prepared in the most complete and modern biological laboratories, and is **the True Living Bulgarian Bacillus.** Its production is safeguarded by the same precautions taken in the preparation of the Mulford Serums and Bacterins, and **the Purity of Each Lot is Made Certain by Careful Bacteriological Tests Before Releasing from the Laboratory.**

Cultures of Bulgarian Bacillus are furnished by our laboratories only in individual sealed tubes, as this is the **best** method for preserving vitality of the cultures and for guarding against contamination.

Bulgarian Bacillus Mulford is supplied in packages containing 20 tubes (20 doses) each package stamped with an expiration date to insure active living cultures.

It is important that fresh cultures be furnished; otherwise their efficiency is lessened and the result will be less satisfactory.

The Bulgarian Bacillus must be kept in a cool place, preferably the ice chest or refrigerator, to maintain activity.

BULLETIN MAILED UPON REQUEST

H. K. MULFORD COMPANY

Manufacturing and Biological Chemists

Philadelphia

New York Boston Kansas City St. Louis New Orleans Minneapolis
Chicago Atlanta Dallas Seattle San Francisco Toronto